Can budget institutions counteract political indiscipline?

SUMMARY

The budget is an expression of political rather than economic priorities. We confirm this proposition for a group of new and potential members of the European Union, finding that politics dominates. The contemporary practice of democracy can increase budget deficits through not only ideological preferences, but also more fragmented government coalitions and higher voter participation. Long-term structural forces, triggered by societal divisions and representative electoral rules, have more ambiguous implications but also appear to increase budget pressures, as others have also found. However, our most robust, and hopeful, finding is that budget institutions – mechanisms and rules of the budget process – that create checks and balances have significant value in curbing fiscal pressures even when the politics is representative but undisciplined, and when long-term structural forces are unfavourable.

— Stefania Fabrizio and Ashoka Mody

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1. INTRODUCTION

Political economists have reached important, but pessimistic, conclusions about long-term influences on fiscal performance. They find, for example, that constitutional provisions shaping electoral rules play a key role in determining fiscal outcomes, both directly and indirectly through their impact on the form of government (Persson and Tabellini, 2003, 2004). In particular, more representative electoral rules achieve inclusiveness but at the cost of reduced political and fiscal discipline. Aghion *et al.* (2004) find that the electoral rules are themselves the consequence of deeper structures in society. Where societies are divided along ethnic or religious lines, electoral rules are likely to be chosen to accommodate those interests, leading, in turn, to coalitional governments and a competition for fiscal resources. Since societal characteristics evolve slowly, and constitutions are, rightly, not often changed, the political processes

they set in motion develop strong inertia, and, by implication, so do budgetary outcomes.

In this context, then, does policy have a role? Are policies, merely 'veils' or 'epiphenomena', mapping directly from history and politics with no substantive consequence? Even if they do have an independent bearing on outcomes, do policy measures offer the possibility of changing course despite the strong influence of history and politics? And, if so, for countries seeking to improve their fiscal position, what measures are likely to work?

In parallel, another group of scholars has examined whether budget formation rules influence fiscal performance (Alt and Lowry, 1994; Poterba, 1994; von Hagen and Harden, 1995; Hallerberg and von Hagen, 1999; Alesina et al., 1999; Stein et al., 1999). They conclude that checks and balances in the formulation and implementation of the budget are epiphenomena, but have real effects on budgetary outcomes.

Our contribution is twofold. First, we isolate the role of the budgetary institutional structure, while controlling for a more comprehensive set of economic and political conditioning factors than has been possible in past studies. Thus, Persson and Tabellini (2003, 2004) examine the influence of electoral rules but not of budget institutions; Perotti and Kontopoulos (2002) analyse government fragmentation and ideologies, as well as fiscal institutions, but do not consider electoral rules. Where, in principle, all factors are considered, as in Alesina et al. (1999), the findings are based on a cross-section of about 20 countries.

Second, we focus the empirical analysis on an important context: the new and potential member states of the European Union between 1997 and 2003. In anticipation of their accession to the European Union on 1 May 2004, the new member states made a commitment to budgetary discipline. This ongoing process – culminating in their commitment to adopt the euro – represents an important historical experiment. However, despite the commonality of this commitment, there has been no uniform tendency toward convergence to specific quantitative budgetary benchmarks. Estonia, for example, has managed its public finances well, even running a primary surplus in some years. Poland improved its fiscal position in the late 1990s, running a surplus in 1999 and 2000, but drifted back to deficits thereafter. Hungary's budget balance has generally worsened over the time span covered in this paper. The countries also have different legacies. While the Baltic nations have small governments, Hungary and Poland and, to a lesser extent, the Czech Republic have large governments, with expenditure-to-GDP ratios that lie above the line showing the tendency for governments to increase in size with per capita incomes (Figure 1).

For all of these countries, the challenges ahead are significant, not least because they have adopted proportional electoral rules, which, though varying in degree across countries, increase the likelihood of coalitional governments and, hence, generate pressures on the budget.

The empirical focus on this small set of central and eastern European countries has its limitations, but also has benefits. The concern – and it is an important one –
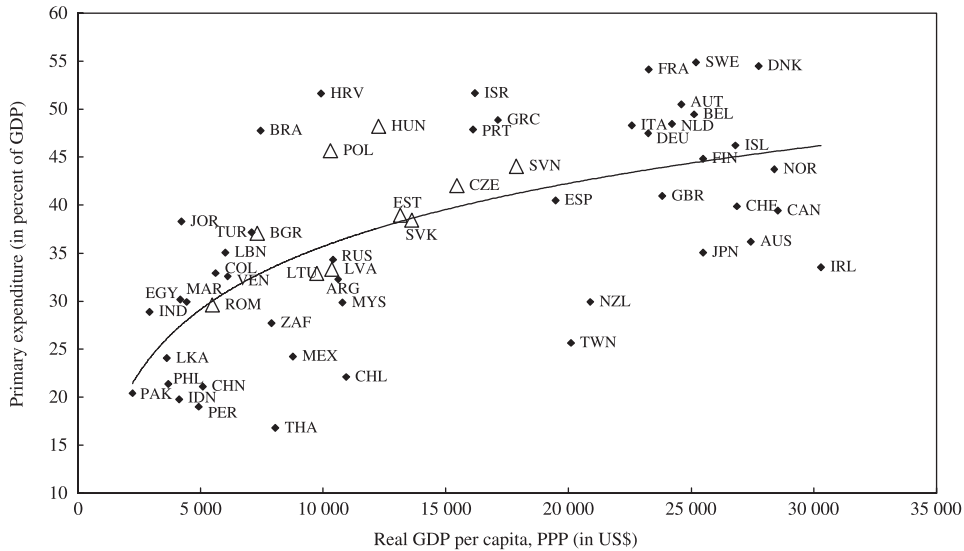
Figure 1. General government expenditure and per capita GDP, 2003

is that the data do not contain enough information to draw the kinds of conclusions necessary for policy recommendations or to move this research agenda forward. We are encouraged, however, by the surprising robustness of the principal findings and their consistency with a broad range of studies that have had a narrower focus. The results strengthen the *prima facie* basis for specific institutional or rule-based measures to curb fiscal pressures. The advantage of this sample, making the results of potentially more general interest, is the time-series variation in the quality of fiscal institutions. As part of their reform agenda for transition to market economies, some countries improved their fiscal institutions, though the extent and pace of change varied considerably and at least one experienced significant slippages. Thus, while past studies have relied heavily on the cross-sectional relationship between budget institutions and fiscal performance, this sample allows us to relate their evolution to fiscal performance. At the same time, to guard against the risk of omitted variables, we also evaluate the role of time-invariant country characteristics in transmitting shocks to budgetary outcomes, using an approach developed by Blanchard and Wolfers (2000) and adapted to this context by, among others, Persson (2002, 2004), Persson and Tabellini (2003, 2004) and Milesi-Ferretti *et al.* (2002).

Also of broader methodological interest is the multidimensional characterization of the political determinants of fiscal performance. We find that the influences of these variables are more sharply discernible when they are considered as groups rather than as individual variables. This, we conjecture, reflects the fact that history and politics impact policy formulation through a variety of overlapping channels. While the choice
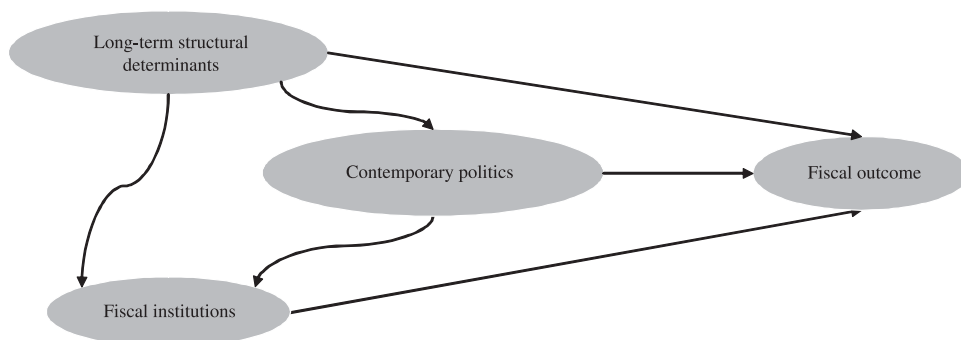
Figure 2. Determinants of fiscal performance

and grouping of variables used in this paper is ad hoc, we are struck, in particular, by the interactions between the degree of coalitional fragmentation and ideology, the latter itself best represented as a vector that included, in our case, the traditional left-right distinction along with the degree of nationalism and the attitude toward fiscal decentralization.

We reach three main conclusions. First, of greatest interest to policymakers, the quality of institutions continues to matter strongly in determining fiscal outcomes, even after including several conditioning variables and testing for a range of possible statistical biases. Second, contemporary politics is important and appears to trump the economic conditioning variables. In particular, more fragmented government coalitions, and those with an ideological disposition toward the 'left', toward a higher degree of nationalism, and toward greater fiscal decentralization, tend to be less fiscally conservative. Greater voter participation – a desirable attribute of a vibrant democracy – appears to loosen the budgetary purse strings, as discussed in Mueller and Stratmann (2003). Third, the 'deeper' the influence of historical and political factors – ethnic fractionalization and the district magnitude (the number of representatives elected per district) – supports the idea that more inclusiveness hurts budgetary outcomes; however, these results are unstable, possibly reflecting theoretical ambiguity in the relationships and, more likely, the absence of time variation in these variables in the small country sample. In sum, then, while contemporary democratic practice and long-standing political and societal characteristics have a significant bearing on fiscal outcomes, the more hopeful message of this paper is that policy initiatives that create checks in the competition for fiscal resources can materially help. These relationships are summarized in Figure 2.

The rest of this paper proceeds as follows. In line with Figure 2, Section 2 reports the conclusions of earlier research on the influence of structural features and contemporary politics on fiscal outcomes, followed by a closer look at the role of fiscal institutions in containing fiscal pressures in representative democracies. Section 3 describes the cross-country and over-time variation in fiscal institutions in our sample countries. The next three sections report the empirical results. Section 4 presents the benchmark

findings relating the variations in the economic, political, and budgetary institutions variables to the evolution of the fiscal balance. Section 5 considers the possibility that factors that do not vary over time nevertheless have time-varying effects, because they condition the transmission of shocks to the fiscal balance. And Section 6 examines the influence of these same determinants separately on government revenues and expenditures. A final section concludes.

2. THE DETERMINANTS OF FISCAL PERFORMANCE: A SELECTIVE LITERATURE REVIEW

As Figure 2 depicts, a variety of factors operate – in direct and indirect ways – on budgetary outcomes, with the theory suggesting important non-linearities. To help guide a parsimonious empirical analysis, this section summarizes the theoretical propositions that have found empirical support. We begin with a description of 'structural' variables, those that change little over time and, moreover, condition the practice of the country's politics. Next, however, we note that democratic practice has its own short-term dynamics, with (possibly independent) implications for fiscal decisions. Finally, we discuss whether fiscal institutions are merely a veil or can contain politics in democratic societies.

2.1. Structural determinants

The principal tension arises from the balance a democracy must strike between achieving broad representation while maintaining fiscal accountability. This tension is seen in the context of population diversity and electoral system design. Population diversity creates pressures for greater representation but potentially weakens fiscal discipline (Aghion *et al.*, 2004). The electoral system, by defining the rules of political engagement, influences the formation of parties contesting elections and the eventual fragmentation of ruling coalitions, thereby establishing the balance between representation and accountability.

   The feature of electoral systems that has drawn most attention is the proportionality of the electoral rule, though electoral systems do differ in other important ways and, especially, Hallerberg and Marier (2004) caution that the relationships may be non-linear (see Lijphart, 1994 for a classic treatment). In a majoritarian system, voters in a district elect one candidate to the legislature. Increasing proportionality (district magnitude) implies an increasing number of candidates elected per district (in proportion to the votes received) and, hence, increasing voice for an individual voter. Thus, proportional elections foster 'representativeness', while majoritarian elections are thought to encourage 'accountability'.

   Consistent with this view, Persson and Tabellini (2003, 2004) find, in a cross-country setting, that majoritarian systems are associated with greater fiscal discipline than are proportional systems. Persson *et al.* (2005) further conclude that electoral

Table 1. Averages of country characteristics treated as time-invariant

Country	Ethnic fractionalization	Average district magnitude	Voter turnout
Bulgaria	0.40	7.7	66.9
Czech Republic	0.32	25.0	69.4
Estonia	0.51	9.2	61.5
Hungary	0.15	12.2	66.4
Latvia	0.59	20.0	76.2
Lithuania	0.32	35.3	62.1
Poland	0.12	16.7	48.7
Romania	0.31	7.8	70.7
Slovak Republic	0.25	150.0	76.6
Slovenia	0.22	11.0	76.7

Notes: Ethnic fractionalization is computed as one minus the Herfindal index of ethnolinguistic group shares in the population. *District magnitude* is the number of elected representatives per district. *Voter turnout* is the share of voters in the voting age population.

Source: See Appendix B for data sources and definitions of variables.

systems do not have a direct effect on fiscal outcomes; rather, the influence is indirect: greater proportionality induces more parties into the electoral process and into the ruling coalition, with a tendency to higher public expenditures.

This is not good news for the countries we consider. Not one of them has a majoritarian system. The average district magnitude is 29, with a low of 8 in Bulgaria and Romania and a high of 150 in the Slovak Republic (Table 1). Note also that the correlation between ethnic fractionalization and district magnitude is weak in our sample of countries (Table 2), implying that the effects of diversity are not mediated predominantly through electoral systems.

2.2. Contemporary politics

As Persson *et al.* (2005, p. 26) point out: 'there is considerable time variation in the type of government, which cannot be easily explained by sluggish electoral rule variables'. This is true in our context, where electoral rules have not changed during the sample period but the 'within-country' variation in the degree of government fragmentation and government ideologies is significant (Table 3).

In an early contribution, Roubini and Sachs (1989) found a tendency for more fragmented government coalitions to run larger budget deficits, consistent with the proposition that more fragmentation allows greater scope for multiple constituencies to exercise claims on limited fiscal resources without their bearing the full cost of the taxation needed to cover the benefits received (see Box 1). Subsequent cross-country studies have validated this conclusion (Hahm *et al.*, 1996; Alesina *et al.*, 1999). Similarly, across states within the United States, greater political fragmentation has been associated with more intense public spending pressures (see Alt and Lowry, 1994; Poterba, 1994; and Besley and Case, 2003).

Table 2. Political correlations

| | Government fragmentation | Government ideology | | | Fiscal institutions index | Ethnic fractionalization | Distinct magnitude | Voter turnout |
		Nationalism	Fiscal centralization	Left/right				
Government fragmentation	1.00							
Government ideology (nationalism)	−0.04	1.00						
Government ideology (centralization)	−0.07	0.23	1.00					
Government ideology (left/right)	−0.37	0.44	0.03	1.00				
Budget institutions index	−0.03	−0.06	0.10	−0.32	1.00			
Ethnic fractionalization	0.01	0.34	0.04	0.53	0.16	1.00		
Electoral rule (average district magnitude)	−0.14	0.22	−0.07	0.13	−0.36	−0.12	1.00	
Voter turnout	−0.28	0.29	−0.09	0.32	−0.34	0.29	0.30	1.00

Source: Authors' calculations.

Table 3. Descriptive statistics

Variable		Mean	Std. dev.	Min	Max
Unemployment rate	Overall	11.29	4.23	4.30	20.00
	Between		4.06	6.16	18.11
	Within		1.98	6.05	15.65
Inflation	Overall	9.17	11.12	−1.20	59.10
	Between		10.20	1.22	37.15
	Within		5.75	−12.68	31.12
Openness index	Overall	0.90	0.25	0.46	1.36
	Between		0.25	0.51	1.24
	Within		0.09	0.70	1.10
Fiscal institutions index	Overall	2.12	0.45	1.37	2.72
	Between		0.45	1.46	2.63
	Within		0.13	1.37	2.47
Government fragmentation	Overall	0.63	0.20	0.27	1.00
	Between		0.14	0.42	0.81
	Within		0.15	0.29	0.96
Left/right	Overall	11.11	3.53	5.81	17.35
	Between		2.84	6.41	16.40
	Within		2.32	5.55	15.95
Nationalism	Overall	11.44	3.48	6.80	17.57
	Between		2.80	7.11	16.28
	Within		2.37	6.15	15.28
Fiscal centralization	Overall	10.46	2.00	7.09	13.46
	Between		1.28	8.41	12.92
	Within		1.63	7.30	13.62
Ethnic fractionalization	Overall	0.31	0.14	0.12	0.59
	Between		0.15	0.12	0.59
District magnitude (logarithms)	Overall	2.83	0.81	2.00	5.00
	Between		0.90	2.00	5.00
Voter turnover	Overall	67.00	8.39	48.70	76.70
	Between		8.67	48.70	76.70
Lagged debt-to-GDP	Overall	33.99	23.34	5.80	107.50
	Between		23.75	6.69	82.90
	Within		5.63	12.80	58.60

Source: Authors' calculations.

More so than with coalitions, ideological predispositions do not follow in any simple manner from structural conditions. Though several authors test the effect of the traditional left-right distinction, the results have been ambiguous. This is not surprising. As Cukierman and Tomassi (1998) argue, just as it took 'a Nixon to go to China', leftist governments may be more credible in persuading their constituents of the urgency and value of budgetary conservatism. Also, ideology need not be unidimensional. For example, there is no necessary relationship between the traditional left-right distinction and the degree to which governments favour fiscal decentralization or promote nationalism. Table 2 reports correlations along these ideological dimensions.

Finally, Mueller and Stratmann (2003) find that higher voter participation in elections has been associated with larger governments and slower growth. Greater

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Box 1. Fragmentation and fiscal discipline

As with non-renewable resources, the budget is subject to a common-pool problem (Shepsle and Weingast, 1981 and Weingast *et al.*, 1981). When many can claim access to a valuable resource for which they pay only a part of the cost, the pressure will be to over-consume that resource. In the context of a budget, a tendency will arise for public spending in favour of interest groups who bear only a fraction of the taxes needed to finance the expenditures that benefit them. The larger the number of interest groups, the greater the spending that will be induced. In a dynamic model, Velasco (1999) concludes that the spending pressures will, in the short run, lead to a drawdown of the national wealth (or an accumulation of debt). A country will continue to run deficits even as debt is being accumulated and will respond to the eventual need to repay that debt only when it has crossed a certain threshold – when the 'writing is on the wall', at which point distortionary taxes will need to be raised.

Hallerberg and von Hagen (1999) note the parties of a governing coalition have incentives to shift taxes onto the constituents supporting other parties. Persson *et al.* (2005) focus on competition within coalitions. A coalition member has an incentive to provide public goods or subsidies directed narrowly at its constituents to ensure their continuing loyalty. The costs arising from this competition are borne, in part, by coalition partners (who suffer future electoral losses) and by the general taxpayer. Since all members of the coalition have the same spending incentives, a coalition government will end up spending more than a single-party government would.

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participation increases the pressure on governments to deliver for their constituents. A more cynical view is that increased participation is associated with greater involvement of uninformed voters, leading to worse policies. Either way, wider representation once again appears to conflict with policy discipline. Though voter participation can, and does, change from one election to another, in practice, the variations in our sample of countries have been small. As such, we treat it as an unchanging variable, but one that differentiates countries.

2.3. Budget institutions and fiscal performance

If a politically desirable increase in representation is accompanied by undesirable fiscal outcomes, can this unpleasant trade-off be alleviated? Fiscal institutions – the rules and procedures of budget formation – offer a possibility. These institutions,

Poterba (1996, p. 47) suggests, are a form of 'self control' imposed by fiscal actors on themselves. The aim, Eichengreen *et al.* (1999, p. 425) note, is not to 'depoliticize' fiscal decision-making but rather to improve the quality of decisions. This leaves open the question whether fiscal institutions can have real effects. In other words, even if sensible rules and procedures are set up, will self-interested political actors work around them to nullify their effectiveness? The international evidence and that from the US states are that fiscal institutions do matter, as Alesina and Perotti (1999) report.

To overcome the common-pool problem (Box 1), two perspectives have received attention (see, among others, Hallerberg and von Hagen, 1999). Under the centralized, or delegation, approach, budgetary power is concentrated in the hands of key policymakers (e.g., the prime minister or finance minister), who have an incentive to internalize the costs and benefits of public activities.[1] Under a more decentralized approach, the solution is collective negotiation and commitment to detailed multiannual fiscal targets. These two approaches, combined with structures and devices to transparently and efficiently monitor and enforce budget decisions, can promote fiscal discipline.

Hallerberg and von Hagen (1999) suggest that a strong finance minister will play a critical role in one-party governments, since factions within a party have fewer policy disagreements and the party can credibly delegate budgetary power to a central player. In coalition governments – and especially in minority-coalition governments – a particular coalition partner may be unwilling to delegate decision-making powers to a central player from another party, and the contract-based approach, backed by well-informed and transparent rules, is likely to be superior. A role remains for the finance minister, but mainly to monitor and enforce the contract. The new and potential EU member countries in our sample typically have multiparty coalition governments, and, therefore, the contract-based approach would appear to be the most appropriate for them. We find in our empirical analysis that contracts help. However, formalized under medium-term budgetary frameworks (MTBFs), these are still in their early stages. As such, effective delegation to finance ministers, who retain considerable discretionary authority, has also helped contain fiscal pressures.

3. BUDGET INSTITUTIONS IN NEW AND POTENTIAL EU MEMBER STATES

A quantitative index of the overall quality of budget institutions (or fiscal institutions) was constructed for ten countries: Estonia, Bulgaria, the Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic, and Slovenia (Appendix A). The three steps of the budget process are (1) the preparation stage, when the

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[1] Franzese (1999) models an independent central bank as one that is able to shift the weight of decisions toward the common good and away from the disparate interests of politicians. Not surprisingly, the call has been made for national fiscal councils to mimic independent central banks (see Eichengreen *et al.*, 1999; Annett *et al.*, 2005; and Wyplosz, 2005).

budget is drafted; (2) the authorization stage, in which the draft budget is approved and formalized; and (3) the implementation phase, where the budget is executed and may be modified/amended.

3.1. Preparation stage

Principles of stronger hierarchy and cooperative bargaining are applied in this phase through (1) the introduction of fiscal rules that limit deficit spending; (2) the establishment of quantitative budgetary targets based on a macroeconomic framework from the onset of the budget formulation; and (3) the relative dominance of the finance minister/prime minister in the budget negotiation process. With respect to variable 1, which refers to fiscal rules, Estonia and Latvia have limits on spending, and the Polish constitution restricts the debt-to-GDP ratio to below 60%, through a provision introduced in the organic budget law of 1999. With respect to variable 2 of the index, only Slovenia uses multiannual targets under an MTBF. However, five out of the ten countries did substantially improve their sequence of budgetary decision making. Less variation exists in the degree to which budget negotiations are centralized (variable 3 of the budget institutions index). The Minister of Finance is typically responsible for compiling the draft budget and bilateral negotiations with the spending ministries. Greater diversity exists in the reconciliation of disputes (variable 4 of the budget institutions index).

3.2. Authorization stage

This phase focuses on (1) explicit limits on the scope of amendments; (2) the sequence of decision making in the legislative budget process; (3) the relative power of the executive and parliament; and (4) the role of the president. In Estonia, Lithuania and Slovenia, amendments to the budget for higher expenditure have to be offset by specific sources of financing, so as to leave the overall budget target unchanged (variable 5 of the index). Poland and Bulgaria introduced formal limits on the scope of the legislature to amend the government budget in 1998 and 2003, respectively. These constraints help reduce the common-pool problem by forcing the legislators to recognize the trade-offs between projects. Only in the Czech Republic does the budget committee initially review the draft budget to set limits to the total revenue, expenditure, and deficit, which cannot be changed in the subsequent readings (variable 6). Institutional arrangements that favour the executive in conflicts arising with the parliament (variable 7) are considered more conducive to fiscal discipline. Poland gives the executive the greatest leverage, including the possibility of dissolving the parliament if an agreement cannot be reached. In the Czech Republic, in 2001 the rules were diluted if a draft budget was not approved on time. The Estonian position improved in 2003, when the possibility of the government's calling for a vote of confidence was introduced. With the exception of Hungary, Slovenia, and,
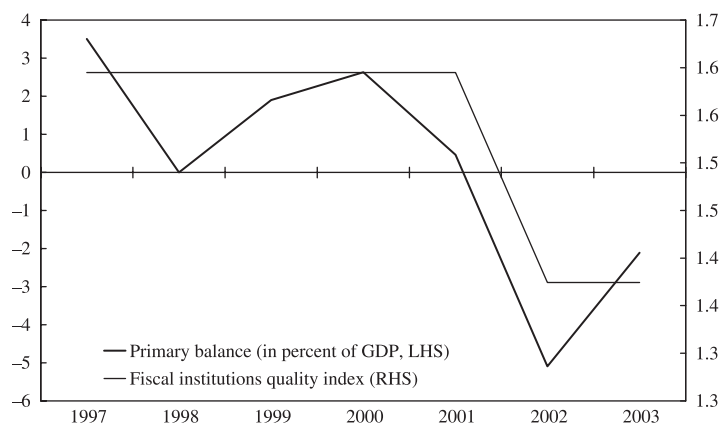
Figure 3. Hungary: Budget institutions and fiscal performance, 1997–2003

Source: Authors' estimates; Hungarian authorities; and fiscal notifications to the European Commission.

more recently, Poland, the president has had some power in the budget process (variable 8 of the budget institutions index). The index presumes that, when the president is permitted veto power, this authority will be exercised in pursuit of his/her own policy agenda, creating a more fragmented process and one less conducive to fiscal discipline.

3.3. Implementation stage

In this stage, the degree of firmness in the execution of the budget is considered (variables 9, 10, and 11 of the budget institutions index), together with the procedures governing adjustments to unforeseen revenue shortfalls or unexpected overspending (variable 12 of the budget institutions index). The Hungarian position, already weak in this area, deteriorated in 2002 (Figure 3), as an amendment to the organic budget law was introduced that allowed considerable leeway in undertaking additional spending without supplementary appropriations and parliamentary approval. This change meant that the government could, to a certain extent, modify the budget parameters, and the agreements made in the budget planning and authorization phases could be undermined. The Czech Republic improved substantially in this dimension when it included in the 2000 budget law a formal rule that higher expenditure must be compensated for by decreasing other spending. However, the position worsened in 2001, when unused funds were allowed to be carried into the following year. Finally, in reaction to negative fiscal shocks, in four out of the ten countries (Bulgaria, Estonia, Latvia and Lithuania), the finance minister has been granted the authority to block expenditures if unforeseen revenue shortfalls or overspending occur. In the remaining countries, the cabinet, instead of the finance minister, can block expenditure without parliamentary approval.

These features of the budget formation and execution process are combined into a variety of sub-indices and an overall index of budget institution quality (Appendix A). By the overall index, Estonia and Slovenia stand out as countries that have done consistently well. Poland has considerably improved its position over this period. In contrast, the Hungarian position, already low, has deteriorated. Table 4 shows the ranking of the ten countries for 1997 and 2003. For comparison, we also constructed a partial index, using items 1–3, 5–6, and 9–12, for EU-15 countries, based on the coverage of rules and procedures in von Hagen *et al.* (2005). In general, the EU-15 countries have budget institutions superior to those in the new and potential EU member states. Sweden, France, the United Kingdom, and Spain stand out for advanced features.

4. BENCHMARK RESULTS

The goal in this section and the next is to explain the short-term dynamics of the primary budget balance, that is, the balance most under the control of the national authorities, thus the costs that arise on account of relatively inflexible debt repayment are excluded. We pool the observations from the ten countries over the seven years, 1997 through 2003. The following empirical specification is used:

$$y_{it} = \alpha + (v_i + \eta z_i) + \beta_t u_t + \delta x_{it} + \phi w_{it} + \gamma s_{it} + \varepsilon_{it}, \tag{1}$$

where y_{it} is the fiscal primary balance in country i and year t; v_i is a set of unchanging country-specific effects (proxied by country dummies); z_i are time-invariant institutional variables; and u_t are effects common to all countries in period t (time dummies). The three groups of time-varying explanatory variables are x_{it}, the economic control variables; w_{it}, the political control variables; and s_{it}, the fiscal institutions index.

To persuasively establish the relationships outlined in Equation (1), three econometric problems need to be addressed. First – and the most intractable of these – is the possibility that budget outcomes influence the evolution of fiscal institutions, rather than the other way around, as presumed. While the problem is widely recognized, it has not really been resolved, since identifying the exogenous component of fiscal institutions is hard. Alesina and Perotti (1999), Stein *et al.* (1999), Knight and Levinson (2000), and Perotti and Kontopoulos (2002) discuss the difficulties in dealing with this problem of reverse causality. Identifying an 'instrument', or a variable that influences the fiscal institutions but is not itself influenced by budgetary outcomes, is a hurdle that no one has yet crossed. Acemoglu (2005) is generally pessimistic about the possibility of identifying causal relationships in comparative political economy and argues that robust non-causal relationships nevertheless are of value to theoretical analysis and policymaking. The working assumption in the earlier papers, which we maintain, has been that budget performance cannot quickly feed back into alteration of budget institutions since these are costly to change. We do report results of Arellano-Bond and Keviet-bias procedures that statistically deal with the problem but are not conclusive in this regard.

Table 4. Fiscal institutions quality index

	1997 Rank[a]				2003 Rank[a]			
	Preparation	Authorization	Implementation	Overall	Preparation	Authorization	Implementation	Overall
Estonia	3	2	1	1	3	2	1	1
Poland	4	7	5	6	3	1	4	1
Slovenia	1	3	7	2	1	4	7	3
Latvia	2	8	1	3	2	9	1	4
Czech Republic	7	1	8	4	5	2	8	5
Lithuania	7	4	1	5	5	5	5	6
Romania	6	10	4	7	8	7	3	7
Bulgaria	7	9	6	9	5	10	5	8
Slovak Republic	10	5	9	10	10	6	9	9
Hungary	4	6	10	8	8	7	10	10

[a] Higher rank indicates better quality.

Source: Authors' calculations.

Second, and related, is the possibility of 'omitted variables'. These variables, although explaining the evolution of budget outcomes, because they are omitted, their effects are incorrectly attributed to the included variables, leading, in particular, to an overstatement of the fiscal institutions effect. A partial solution to this problem is disregarding variations across countries and analyzing only the variations within a country. Doing so, in effect, eliminates the unobserved v_i while also sweeping out the z_i, the observed but time-invariant effects that encompass a variety of influences on budget deficits. By thus focusing on variations within a country over time, the problem of omitted variables is alleviated but not eliminated. Most studies have not been able to pursue this 'within-country' or 'fixed-effects' approach, either because budget institutions do not move much over time or because these movements are difficult to measure. Where it is implemented, Knight and Levinson (2000) suggest, the results are typically different from those obtained in cross-sectional analysis, indicating that the problem of omitted variables is relevant. Since our data permit us to do so, the within-country analysis forms our benchmark.

Third, and paradoxically flowing from the solution to the second problem, because some of the unchanging country effects (the z_i) are of analytical interest, sweeping them away throws out important information. A partial solution to this problem has been proposed by Blanchard and Wolfers (2000). In effect, it allows the analyst to ask if the reactions to the time-varying variables are conditioned by the unchanging country characteristics of interest, as described below in Box 2.

Appendix B provides details of the explanatory variables used and their data sources. Table 3 reports the means and variations of the explanatory variables. These show that, even within this relatively homogenous group, considerable heterogeneity exists.

Since we are working with only ten countries, the cross-country regressions are only briefly presented (in Table 5) to contrast the findings with the subsequent results. Among the economic conditioning variables, a higher public debt-to-GDP ratio is associated with a larger primary surplus (or smaller deficit) and is significant in some specifications, suggesting greater fiscal effort when debt payments increase. Of the four variables representing democratic practice – fragmentation of the government coalition and the three ideology variables – only the nationalism variable is significant, albeit at the 10% level, in the cross section, with a more nationalistic ideology tending to reduce the budget surplus. Among the longer-term determinants of budgetary performance, the district magnitude shows the most action, as a larger district magnitude results in a smaller long-term surplus. Note that here, and in the rest of the paper, we use the log of the district magnitude as the explanatory variable to limit the influence of the Slovak Republic, which has an especially large district magnitude. Also, an IMF-supported programme tends to be associated with a larger primary surplus. And, once we control for an IMF-supported programme, there is some hint in the cross section that better budgetary institutions also help increase the primary surplus. These results are in line with the findings of Gleich (2003) and Yläoutinen (2004).

Box 2. Shocks and institutions

Blanchard and Wolfers (2000) sought to disentangle the influence of economic shocks (changes in oil prices and shifts in productivity trends) from that of sluggish labour market institutions on the evolution of unemployment. By examining the changes in the variables of interest within a country over time, they used the conventional approach to eliminate the unobserved, unchanging country influences, the so-called fixed effects (since the failure to do so creates the risk that the influence of those unobserved effects will be incorrectly attributed to the variable of interest to them). But since doing so also eliminates information on the unchanging labour market institutional variables of interest, they proposed estimating an equation of the following form:

$$y_{it} = \alpha + [1 + \lambda(z_i - \bar{z})](\beta u_t + \delta x_{it}) + \gamma s_{it} + \phi w_{it} + (v_i + \eta z_i) + \varepsilon_{it}. \qquad (2)$$

In effect, this procedure (with coefficient estimates obtained by non-linear least squares) tests if time-invariant variables, such as labour market or political institutions, shape different responses to common and country-specific economic and political events (for recent applications, see Persson, 2002 and Milesi-Ferretti *et al.*, 2002). Country-fixed effects (country dummies) control for the country-specific averages $(v_i + \eta z_i)$. The crucial new parameter is λ. The formulation postulates a common response, βu_t, to common shocks, u_t. In turn, however, the common response is shaped by the term $\lambda(z_i - z)$, reflecting the influence of country institutions z_i (e.g., the district magnitude). Because z_i is measured as a deviation from the mean across countries, βu_t is the measured response in the sample when the z_i is at the mean of the sample. In Tables 9–10, we allow also for z_i's to interact with country-specific events, the variables x_{it}, again following Blanchard and Wolfers (2000). In Table 10, the response to fiscal institutions, s_{it}, is also mediated through the unchanging political environment.

Notice that the specification implies that the same coefficient, λ, conditions all the shocks/events. In principle, it is possible to allow differential responses. However, the number of parameters quickly explodes. Blanchard (2005), in reviewing the evolution of recent research, recognizes the importance of exploring a variety of interactive effects but cautions that the differential effects may be difficult to identify. In the context of testing for the effect of central bank independence, Franzese (1999) allows for differential interactions but concludes, in that case, that the assumption of a common mediating effect is a justifiable approximation.

Table 5. Economics, politics and fiscal performance: evidence from cross-country regressions

	Primary balance-to-GDP ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged debt-to-GDP ratio	0.06 (0.04)	0.05 (0.02)*	0.08 (0.02)**		0.06 (0.03)*	0.06 (0.02)**
Unemployment rate	−0.07 (0.23)					
Inflation	0.02 (0.08)					
Openness index	−1.72 (3.33)					
IMF program dummy		2.79 (1.33)*	3.09 (1.06)**			1.91 (1.06)
Government fragmentation				0.65 (6.04)		
Government ideology:						
Left/right				0.27 (0.32)		
Nationalism				−0.56 (0.34)		
Fiscal centralization				0.51 (0.61)		
Fiscal institutions index			2.74 (1.21)*			1.52 (1.18)
Ethnic fractionalization					3.37 (4.34)	
District magnitude					−1.50 (0.50)**	−1.03 (0.53)
Voter turnout					−0.04 (0.05)	
Number of countries	10	10	10	10	10	10

Note: This table displays estimates of the fiscal outcome:

$$\bar{y}_i = \alpha + v_i + \gamma \bar{s}_i + \delta \bar{x}_i + \phi \bar{w}_i + \eta z_i + \varepsilon_{it}$$

where an overbar denotes a time average of y_{it}, the primary balance in country i and year t, s_{it}, the fiscal institutions index, x_{it}, economic control variables, w_{it}, other control variables, and z_i, time-invariant institutional variables. The variable v_i is a country specific component. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

When we move from the cross-sectional to the within-country analysis in Table 6, we have, in principle, seven observations for each of the ten countries for a potential total of 70 observations. However, we lose five observations (1997 for Lithuania, 1997 and 1998 for Latvia, and 1997 and 1998 for the Slovak Republic) because the ideological orientation of some of the political parties in the early years could not be identified. Also, we drop two observations (Bulgaria and Romania in 1997, when they experienced very high inflation). Thus, we work throughout with 63 observations. Throughout, by including country fixed effects, we are, in effect, seeking to explain deviations from the country mean. We also include year dummies to control for common shocks.

Table 6. Economics, politics, and fiscal performance: evidence from panel data regressions (fixed effects)

	Primary balance-to-GDP ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged debt-to-GDP ratio	0.05	0.03				
	(0.05)	(0.04)				
Unemployment rate	−0.34	−0.41				
	(0.17)*	(0.15)**				
Inflation	0.06	0.14				
	(0.06)	(0.06)**				
Openness index	4.78	7.89				
	(4.91)	(4.42)*				
Fiscal institutions index		7.52				4.27
		(2.08)***				(2.13)**
Government fragmentation			−0.82		6.23	4.27
			(1.81)		(2.74)**	(2.82)
Government ideology:						
Left/right				0.16	0.49	0.42
				(0.12)	(0.19)**	(0.18)**
Nationalism				−0.39	−0.66	−0.57
				(0.15)***	(0.18)***	(0.18)***
Fiscal centralization				0.30	0.48	0.40
				(0.20)	(0.20)**	(0.20)*
Time dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	63	63	63
Number of countries	10	10	10	10	10	10

Note: This table displays estimates of the fiscal outcome:

$$y_{it} = \alpha + v_i + \gamma s_{it} + \delta x_{it} + \phi w_{it} + \varepsilon_{it}$$

where y_{it} is the primary balance in country i and year t; v_i is a country specific component; s_{it} is the fiscal institutions index; x_{it} comprises economic control variables; w_{it} are other control variables. Estimations of panel data regressions using random effects are reported. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

4.1. Economic and political influences

As in the previous section, we begin with standard economic influences on the budget deficit (Table 6). Briefly, a higher debt level apparently induces greater fiscal effort, increasing the primary balance. However, while the sign on this variable is always positive, it is not statistically significant at conventional levels. The unemployment rate, which is more often closer to statistical significance, has a negative sign, implying that an increase in the unemployment rate reduces the primary surplus (increases the deficit). A higher inflation rate is associated with a larger primary surplus, as if inflation reduces the real value of expenditures without compromising tax receipts. This result is consistent with that of Perotti and Kontopoulos (2002), although their finding is supported by a higher degree of statistical significance. Finally, country openness to external trade is sometimes significant, implying that countries that are

more open also tend to greater fiscal conservatism. However, as we discuss below, and as is the case with the other economic variables, the significance tends to fall when pitted against the political variables, especially in the non-linear regressions.

With these controls in place, we add our overall index of the quality of budgetary institutions to the explanation of the primary balance. The results suggest that stronger budgetary institutions are associated with a larger primary surplus (or smaller deficit). The coefficient is significant at the 1% level of significance.

Turning to political influences, we consider in this section the time-varying variables of the 'practice of democracy' variety rather than structural or constitutional variables, which are considered via the non-linear estimation in the next section. In our taxonomy, voter participation also represents democratic practice, but because it displays only modest changes over time, we treat it in the next section as a time-invariant influence. When considered by themselves, the fragmentation and the three ideological variables, though appearing with plausible signs (Table 6, columns 3 and 4) do not have especially high statistical significance. The statistical significance of all variables increases sharply in column (5) when we place coalitional fragmentation alongside the three ideology variables. Since a larger coefficient on the fragmentation variable (the Herfindahl index derived from the shares of the coalitional partners) indicates less fragmentation, the positive sign on the coefficient indicates a larger surplus with reduced fragmentation.

Thus, the findings imply that fragmentation and ideology need to be examined together. Also ideology is multifaceted. Considering these as a package provides stronger results, consistent with priors that have long existed in the literature. The ideology variables indicate that a coalition that leans to the right, that is not highly nationalist, and that favours centralization of public finances is likely to deliver a conservative budget. In our sample, leftist coalitions have been less fragmented, and some rightist coalitions have had nationalistic tendencies. Only when these dimensions are simultaneously considered do the results show through. Again, when we add the budget institutions index, its coefficient maintains its strong statistical significance. However, the size of the coefficient is smaller, suggesting that the budget institutions are more correlated with political than with economic factors.

4.2. Economics versus politics

We bring together the findings in Table 7. As noted in the introduction, a concern with this exercise is the robustness of the findings. We address, first, the robustness issue through alternative estimation procedures and a search for outliers. This leads to a discussion of the substantive conclusions. Column 1 presents the results of the random-effects estimation, which uses the cross-country and within-country variations. The conditions required for the validity of these estimates are stringent; in particular, the possibility that the omitted variables, relegated to the error term, are correlated with the included variables raises the concern that the coefficient estimates may be

Table 7. Economics versus politics

	Primary balance-to-GDP ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
	Random effects	Fixed effects	Fixed effects	Arellano–Bond	Kiviet-bias adjustment	Fixed effects
Lagged debt-to-GDP ratio	0.09	0.02	0.02	0.07	0.01	
	(0.02)***	(0.05)	(0.05)	(0.07)	(0.08)	
Unemployment rate	−0.08	−0.23	−0.31	−0.09	−0.03	−0.33
	(0.08)	(0.18)	(0.17)*	(0.26)	(0.19)	(0.16)*
Inflation	0.16	0.07	0.12	0.18	0.13	0.12
	(0.04)***	(0.08)	(0.08)	(0.12)	(0.13)	(0.08)
Openness index	3.62	7.39	8.80	12.66	13.78	8.96
	(1.57)**	(4.77)	(4.40)*	(5.25)**	(5.28)**	(4.35)**
Government fragmentation	1.78	6.78	4.39	6.13	6.86	4.66
	(1.72)	(2.96)**	(2.84)	(3.39)*	(3.12)**	(2.76)*
Government ideology:						
Left/right	0.38	0.49	0.37	0.29	0.40	0.39
	(0.12)***	(0.19)**	(0.18)**	(0.21)	(0.21)*	(0.17)**
Nationalism	−0.25	−0.63	−0.46	−0.60	−0.68	−0.48
	(0.16)	(0.20)***	(0.19)**	(0.24)**	(0.24)***	(0.19)**
Fiscal centralization	0.34	0.46	0.38	0.63	0.57	0.36
	(0.20)	(0.26)*	(0.24)	(0.32)*	(0.27)**	(0.24)
Fiscal institutions index	5.09		6.20	9.03	7.37	6.15
	(1.19)***		(2.13)***	(4.42)**	(4.47)*	(2.10)***
Lagged primary balance				0.11	0.24	
				(0.21)	(0.17)	
Time dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	43	53	63
Number of countries	10	10	10	10	10	10

Note: This table displays estimates of the fiscal outcome:

$$y_{it} = \alpha + v_i + \beta_t u_t + \gamma s_{it} + \delta x_{it} + \phi w_{it} + \varepsilon_{it}$$

where y_{it} is the primary balance in country i and year t; u_t represents variables common to all countries; v_i is a country specific component; s_{it} is the fiscal institutions index; x_{it} comprises economic control variables; and w_{it} are political control variables. Column 1 reports results of a panel data regression using random effects. Columns 2, 3, and 6 are the results of panel data regression using fixed effects. In column 4, estimates of the coefficients using Arellano-bond method are shown (in this case, the Sargan test reject the hypothesis of over-identification, ($\Pr \geq \chi^2 = 0.27$), and the hypothesis that average autocorrelation in residuals of order two is zero cannot be rejected ($\Pr \geq z = 0.93$). Column 5 reports bias-corrected LSDV estimates for dynamics unbalanced panel data models (Bruno, 2005). Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

biased. A comparison with the fixed-effects model (columns 2 and 3), which uses only the within-country variation, suggests that the correlation with omitted variables may not be serious.[2] One variable for which the coefficient changes significantly is lagged debt. The implication is that, across countries, higher debt induces greater fiscal conservatism (in line with Bohn, 1998); however, the same effect is not observed

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[2] Formally, a Hausman test does not reject the random-effects estimates.

within a country over time. The statistical reason for this difference is that, as debt levels vary little within a country relative to the cross-country variation (see Table 3), the effects of the within-country movements are difficult to identify precisely – and hence we come back to examining the debt-to-GDP ratio as an unchanging variable in the next section.

While our basic approach to dealing with omitted variables is through the use of country-fixed effects, we also examine if the errors are serially correlated and the lagged dependent variable is picking up additional time-varying omitted effects. The Lagrange multiplier test for serial correlation in residuals, following Baltagi (2005), suggests no serial correlation. Recognizing that this test is only approximate for unbalanced panels, we examine the possibility of dynamics through two different estimation approaches.[3] The Arellano–Bond estimator, which, in principle, deals also with the possibility of reverse causality from budget outcomes to fiscal institutions, allows for the possibility of persistence in budget deficits (Table 7, column 4). However, because this estimator performs well for large samples, which is not exactly our case, we also use the Kiviet-bias adjustment, which works better for unbalanced panels with a small number of units (Table 7, column 5). Given the already small size of the sample, the drop in sample size when using lagged values cautions against a heavy reliance on these results. However, the consistency of the results is reassuring. In particular, the lagged dependent variable is not statistically significant. In the rest of this paper, therefore, we use as a benchmark the fixed-effects, or within-country, estimates without the lagged dependent and debt variables, as in column (6) of Table 7.

Another relevant concern is the robustness of the results to possible outliers. In particular, because of the large changes in fiscal institutions in Poland and Romania, and the small sample, the question arises whether the results are driven by these countries. We follow Milesi-Ferretti *et al.* (2002) and exclude one country at a time to test for the possibility of 'influential' countries. However, the relevance of the fiscal institutions index does not appear to be driven by any single country.[4]

Substantively, when we put the economic conditioning variables alongside the political variables, politics seems to win. In general, the strength of the economic variables declines, though their signs remain as before. Among the political variables, fragmentation becomes less significant, but it retains its expected positive sign. The

[3] There is also the possibility of an 'Ashenfelter dip'. If a country experiences a large deficit, budget institutions may improve in response to this dip and the subsequent reduction of that deficit may be overly attributed to budget institutions. Similarly, an improvement in the budget balance may reduce the incentive to improve fiscal institutions. We regress the fiscal balance residuals from Equation 1 (ε_{it}) on two indicator variables. The first takes a value of 1 if there was an improvement in the fiscal institutions' quality in the following year and a zero otherwise (the dip indicator) the second takes a value of 1 if there was a deterioration in the fiscal institutions' quality one year later (the rise indicator). The coefficients of the two indicator variables are not significant, suggesting the absence of an Ashenfelter dip or rise.

[4] The fiscal institutions index is significant at the 7% level when either Hungary and Poland is dropped and at the 5% level when one of the other countries or both Poland and Romania are dropped.

Table 8. External anchors

	Primary balance-to-GDP ratio			
	(1)	(2)	(3)	(4)
Unemployment rate	−0.33	−0.36	−0.33	−0.35
	(0.17)*	(0.17)**	(0.17)*	(0.18)*
Inflation	0.12	0.11	0.12	0.11
	(0.09)	(0.08)	(0.08)	(0.09)
Openness index	8.97	8.88	9.19	9.02
	(4.41)**	(4.38)**	(4.72)*	(4.85)*
Government fragmentation	4.60	4.19	4.71	4.26
	(2.91)	(2.87)	(2.82)	(3.05)
Government ideology:				
Left/right	0.38	0.35	0.39	0.36
	(0.19)*	(0.19)*	(0.18)**	(0.20)*
Nationalism	−0.48	−0.45	−0.49	−0.45
	(0.19)**	(0.19)**	(0.19)**	(0.20)**
Fiscal centralization	0.35	0.36	0.37	0.37
	(0.26)	(0.24)	(0.25)	(0.27)
Fiscal institutions index	6.16	6.52	6.21	6.55
	(2.13)***	(2.19)***	(2.17)***	(2.29)***
EU accession dummy		−0.85		−0.85
		(1.31)		(1.38)
IMF program dummy	−0.07			0.04
	(1.01)			(1.05)
Election year dummy			0.08	0.05
			(0.61)	(0.63)
Time dummies	Y	Y	Y	Y
Observations	63	63	63	63
Number of countries	10	10	10	10

Note: This table displays estimates of the same fiscal outcome as in Table 8. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

two political variables that remain most clearly significant are the measures of left-right and nationalist ideology. Once more, the overall index of budgetary institutions is highly significant in these specifications, which include the economic and political conditioning variables. Thus, while politics has a strong influence on the budget, discipline appears to be possible through the checks and balances of budgetary processes and institutions. This, then, is our principal finding, one that is confirmed in the more refined specifications discussed below.

For robustness as well as substantive reasons, we also examine two external anchors: membership in the European Union (EU) and an IMF-supported programme (Table 8). EU membership is, in fact, a misnomer since we time the EU dummy to take the value 1 from the year in which negotiations for EU entry were initiated. The premise is that the discipline required for entry into the EU and, subsequently, for euro adoption creates an anchor that reduces the fiscal deficit. The

results indicate otherwise. The sign on the EU dummy is negative, showing, if anything, that the prospect of EU entry raises the deficit, though the effect is not statistically significant. We do not probe this issue in greater detail but presume that two opposing forces are working against each other: a disciplining effect counteracted by increased expenditures in response to new requirements for EU entry. Similarly, the IMF-supported programme dummy is also not significant. As noted above in the cross-section results, an IMF-supported programme was associated with smaller deficits. The fact that this is no longer the case in a 'within' regression suggests that unobserved country factors lead to both an IMF-supported programme and to smaller deficits. Once these unobserved factors are controlled for through country dummies, the direct influence of an IMF-supported programme disappears.

We finally analyse the effect of the timing of elections. Unlike in Brender and Drazen (2005), the 'political cycle' – a larger deficit in the election year – does not appear to be significant for the countries in our sample. Brender and Drazen analyse the effect of the election cycle just after these countries became democracies, while our study focuses on a somewhat later period (1997–2003). That we do not find a significant effect could be in line with Brender and Drazen findings, which show that, as countries become more developed and achieve stronger democracies, the cycle is weaker. Second, we focus on the legislative cycle since these countries have parliamentary regimes, while Brender and Drazen also consider the presidential cycle.

5. THE ROLE OF DEEPER DETERMINANTS: TIME-INVARIANT FACTORS

There remains the possibility that the political determinants of budgetary performance, as well as the restraints exercised through sound budgetary institutions, are mainly a reflection of deeper underlying variables. Because these deeper determinants typically change very little over time (and, in our sample, do not change at all), it has become customary to assess their influence through the reaction they induce to shocks. Blanchard and Wolfers (2000) have analysed two types of shocks: country-specific shocks (represented by time-varying country variables) and common shocks (represented by time dummies). The shocks are interacted with the time-invariant variables, and the influence of the latter is assessed by isolating their effects through a non-linear regression (Box 2). In essence, as Blanchard and Wolfers (2000) note, the methodology evaluates whether the shocks persist longer if the deeper determinants are more salient. In a short time span, a longer persistence implies a higher average realization.

As discussed above, the theory creates some expectations regarding the direction of influence of the time-invariant political institutions but cautions about possible ambiguities and non-linearities. Thus, Aghion *et al.* (2004) argue that greater fractionalization is divisive and leads to greater competition for resources and, hence, less fiscal discipline; however, these negative effects may be offset through the choice of

political institutions.[5] As noted in the introduction, electoral rules have many dimensions, which cannot be captured in a single index. Here we use the simple measure of proportionality or district magnitude (the number of elected candidates per district). In principle, this index measures the extent to which voters' voices count – or the degree to which political parties court all voters. With reduced proportionality, parties can ignore 'safe' districts, focusing their electoral promises towards 'swing' constituencies.[6] Thus, greater proportionality in electoral rules is expected to lead to the formation of more diverse coalitions, which, in turn, can hurt fiscal discipline. Since we also control for the diversity of coalitions, the measured effect of a larger district magnitude may either be an additional influence, reflect non-linearities, or represent inadequacies in our measure of government fragmentation. Finally, as Mueller and Stratmann (2003) show, when voter participation is high, pressures to meet the demands of a variety of constituencies may lead to higher public expenditures and/or lower taxes and, hence, to larger deficits.

5.1. The main results

In general, as we have cautioned, the effects of the time-invariant variables are sensitive to the specifications. Though the direction of influence is typically plausible, both the strength and statistical significance of the influence tend to be unstable.[7] The results are presented in four steps, each step testing the robustness of the findings while also addressing issues of substantive interest. In the first step (columns 1–3 of Table 9), we allow the possibility that the time-invariant variables mediate domestic shocks (developments in inflation, employment, and the trade-to-GDP ratio) and the common shocks (represented by time dummies). Greater ethnic diversity appears to amplify adverse shocks, i.e., an adverse shock to the budget has a bigger impact under conditions of greater diversity. The sign of this coefficient, however, is not significant in this specification. A larger district magnitude and greater voter turnout also amplify adverse shocks, and, in these cases, the statistical significance varies between 5 and 10%.

In the second step (columns 4–6, Table 9), we add the lagged debt-to-GDP ratio as a time-invariant variable. The results above showed that the time variation in the

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[5] As noted, the measure of language fractionalization is virtually the same as that of ethnic fractionalization. Though religious fractionalization is also highly correlated with ethnic fractionalization, it gives quite different results, often appearing with a positive sign, suggesting that more fractionalization is associated with greater budget discipline. Importantly, the variables of interest to us, the quality of budgetary institutions and the time-varying political variables, remain significant and important even when religious fractionalization is included.

[6] Milesi-Ferretti *et al.* (2002) propose a 'standardized' measure of district magnitude, which corrects for the threshold number of votes to gain representation. This measure attempts to predict the number of political parties, rather than voter voice, and gives, in our case, less precise results for the time-invariant variables. The main result on budget institutions, fragmentation and ideology hold strongly.

[7] The greater instability in the coefficient on the time-invariant variables, compared with the other political controls we have used so far, is to be expected since we have a sample of only ten countries and changes in specification are more likely to influence the time-invariant variables.

Table 9. Deeper determinants – interaction with common and country-specific events: non-linear least squares regressions

	Primary balance-to-GDP ratio				
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	−0.05	−7.49	−11.82	4.07	−7.07	−12.13
	(12.28)	(6.24)	(6.13)	(13.85)	(6.43)	(6.26)
Inflation	0.06	0.06	0.06	0.11	0.10	0.09
	(0.05)	(0.04)	(0.05)	(0.07)	(0.07)	(0.07)
Unemployment rate	0.19	0.21	0.14	0.32	0.33	0.16
	(0.13)	(0.13)	(0.14)	(0.18)*	(0.18)*	(0.18)
Openness index	1.65			3.29		
	(2.30)			(3.60)		
Fiscal institutions index	5.47	5.38	5.86	6.28	6.08	6.17
	(2.45)**	(2.40)**	(2.33)**	(2.52)**	(2.47)**	(2.38)**
Government fragmentation	8.12	7.69	6.10	9.74	9.06	6.37
	(2.87)***	(2.83)**	(2.72)**	(2.99)***	(2.96)***	(2.79)*
Government ideology:						
Left/right	0.46	0.45	0.42	0.55	0.52	0.43
	(0.18)***	(0.18)**	(0.18)**	(0.18)***	(0.18)***	(0.18)***
Nationalism	−0.77	−0.75	−0.74	−0.88	−0.85	−0.78
	(0.21)***	(0.21)***	(0.21)***	(0.22)***	(0.22)***	(0.23)***
Fiscal centralization	0.95	1.01	0.98	1.05	1.10	1.02
	(0.30)***	(0.29)***	(0.31)***	(0.30)***	(0.30)***	(0.33)***
Time-invariant variables:						
Ethnic fractionalization	−4.34	−3.59		−3.75	−3.08	
	(3.02)	(2.73)		(1.73)**	(1.65)*	
District magnitude	−1.44	−1.34	−1.18	−0.96	−0.90	−0.92
	(0.85)*	(0.70)*	(0.64)*	(0.46)**	(0.41)**	(0.55)
Voter turnover	−0.13	−0.12	−0.09	−0.09	−0.08	−0.07
	(0.05)**	(0.05)**	(0.04)**	(0.03)***	(0.03)***	(0.04)*
Debt-to-GDP ratio				−0.12	−0.11	−0.01
				(0.01)**	(0.01)**	(0.01)
Time dummies	Y	Y	Y	Y	Y	Y
Country dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	63	63	63
Adjusted R-squared	0.63	0.63	0.63	0.64	0.64	0.64

Note: This table displays non-linear least squares estimates of the fiscal outcome:

$$y_{it} = \alpha + [1 + \lambda(z_i - \bar{z})](\beta u_t + \delta x_{it}) + \gamma s_{it} + \phi w_{it} + (v_i + \eta z_i) + \varepsilon_{it}$$

where y_{it} is the primary-balance-to-GDP ratio in country i and year t; u_t represents variables common to all countries; v_i is a country specific component; s_{it} is the fiscal institutions index; w_{it} are country-specific control variables; and z_i are time-invariant institutional variables. Idiosyncratic economic variables x_{it} include inflation, unemployment rate, and openness index. Time-invariant terms interact with time dummies and idiosyncratic economic variables x_{it}. In columns 4–6 debt-to-GDP ratio is treated as a time-invariant variable. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

debt-to-GDP ratio did not have a material bearing on the movements in the primary surplus. This reflects, in part, the fact that much of the sample variation in the debt-to-GDP ratio is across countries rather than within countries over the short time period covered. Thus, for such short periods, we ask if the level of debt conditions the responses to shocks. The negative sign on the debt-to-GDP variable suggests that a country experiencing a positive shock – an improving budgetary position – will be

less conservative if it has a heavier debt burden. While the intertemporal budget constraint would need to be satisfied eventually, the relatively low debt levels in some of the countries and the relative ease of market financing where debt levels are higher imply that the stock of debt need not constrain short-term budgetary priorities (as also implied by Velasco, 1999, Box 1). Notice that, with the introduction of the debt ratio as a conditioning variable, most results are strengthened.

Moreover, the role of contemporary politics remains salient. Indeed, if anything, with the inclusion of the time-invariant variables, the four contemporary political variables – coalitional fragmentation and the three ideological variables – are now all highly significant. The implication is that contemporary politics is not entirely driven by deeper determinants. Rather, short-term forces can generate political configurations that can move politics against the direction dictated by the longer-term forces, thereby aggravating or mitigating the role of divisive forces.

Finally, the budgetary institutions index remains strongly significant. Relative to earlier estimates, the point estimate is now somewhat lower, at about $5^1/_2$–6; this suggests that a move in institutional quality from the 25th to the 50th percentile leads to an improvement in the primary surplus of about 1.5% of GDP.

In the third and fourth steps (Table 10), we allow for the possibility that shocks to fiscal institutions are also conditioned by the time-invariant variables. In columns 1–3, we do not include the debt-to-GDP ratio, and in columns 4–6 we do. The coefficient on the fiscal institutions index should now be interpreted as the response of the primary budget to fiscal institutions at the mean value of the time-invariant influences (since those variables are entered into the regressions as deviations from their sample means). Thus, in this representation, each country has its own response to improvements in fiscal institutions, depending on the specific values of the time-invariant variables. Estimates show that, though varying in strength, stronger fiscal institutions help everywhere, except possibly in the Slovak Republic, with its large district magnitude and high voter participation. Clearly, these results reflect the imposition of a linear conditioning response, which forces a structure that may not be tenable. Since that was not the main purpose of this paper, we did not pursue non-linear possibilities in any depth, leaving it to be examined in the context of a larger sample.[8]

5.2. Model predictions

How well do these models perform? We present two examples. Figure 4 shows the actual and model-predicted values of the budget balance for Poland and Hungary. The predictions match the actual values rather well, both in absolute magnitudes and changes in direction. For Poland, the early improvement in budget balance reflects,

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[8] Following a suggestion by Hallerberger and Marier (2004), we examined the possibility of piecewise linearity for district magnitude: the results suggest that an initial rise in district magnitude may help fiscal discipline before the influence turns negative at a district magnitude of about 20.

Table 10. Deeper determinants – interaction with fiscal institutions and common and country-specific events: non-linear least squares regressions

	Primary balance to-GDP ratio					
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	18.50	8.93	6.51	28.59	12.35	6.71
	(14.75)	(8.14)	(8.34)	(17.48)	(8.84)	(8.56)
Inflation	0.06	0.06	0.07	0.12	0.10	0.07
	(0.04)	(0.04)	(0.05)	(0.07)	(0.07)	(0.06)
Unemployment rate	0.19	0.21	0.15	0.31	0.32	0.16
	(0.12)	(0.12)*	(0.13)	(0.15)**	(0.16)*	(0.15)
Openness index	2.10			4.24		
	(2.19)			(3.38)		
Fiscal institutions index	2.35	2.40	3.08	3.99	3.75	3.29
	(0.86)**	(0.87)***	(1.08)***	(1.52)**	(1.46)**	(1.57)**
Government fragmentation	8.34	7.82	6.09	10.07	9.23	6.16
	(2.72)***	(2.67)***	(2.65)**	(2.81)***	(2.80)***	(2.72)**
Government ideology:						
Left/right	0.49	0.47	0.41	0.59	0.55	0.42
	(0.17)***	(0.17)***	(0.17)**	(0.17)***	(0.17)***	(0.18)**
Nationalism	−0.78	−0.74	−0.75	−0.88	−0.84	−0.76
	(0.20)***	(0.17)***	(0.21)***	(0.20)***	(0.21)***	(0.23)***
Fiscal centralization	0.96	1.03	1.01	1.04	1.12	1.03
	(0.28)***	(0.28)***	(0.30)***	(0.27)***	(0.29)***	(0.32)***
Time-invariant variables:						
Ethnic fractionalization	−4.78	−3.95		−4.47	−3.67	
	(2.92)	(2.63)		(1.72)**	(1.68)**	
District magnitude	−1.32	−1.24	−1.05	−0.91	−0.87	−0.99
	(0.71)*	(0.59)**	(0.51)**	(0.40)**	(0.36)**	(0.58)**
Voter turnover	−0.15	−0.13	−0.10	−0.11	−0.10	−0.09
	(0.06)**	(0.05)***	(0.04)**	(0.03)***	(0.03)***	(0.05)**
Lagged debt to-GDP ratio				−0.01	−0.01	0.00
				(0.01)**	(0.01)**	(0.01)
Time dummies	Y	Y	Y	Y	Y	Y
Country dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	63	63	63
Adjusted R-squared	0.66	0.63	0.64	0.67	0.67	0.63

Note: This table displays non-linear least squares estimates of the same fiscal outcome as in Table 10.

$$y_{it} = \alpha + [1 + \lambda(z_i - \bar{z})](\beta u_t + \delta x_{it}) + \gamma s_{it} + \phi w_{it} + (v_i + \eta z_i) + \varepsilon_{it}$$

The variables x_{it} include inflation, unemployment rate, openness index, and fiscal institutions index. Time-invariant terms interact with time dummies and idiosyncratic economic variables x_{it}. In columns 4–6 debt-to-GDP ratio is treated as a time-invariant variable. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

in part, the improvement in the domestic fiscal institutions. However, budget performance deteriorated thereafter. Mechanically, this reflects a decline in the inflation rate, which results in a drop in the fiscal balance. The interpretation is that some part of the apparent strength in the fiscal balance was achieved by higher inflation, and the underlying weaknesses were revealed once the inflation rate fell. Thus, while improved fiscal institutions helped, the endemic problems require stronger solutions.
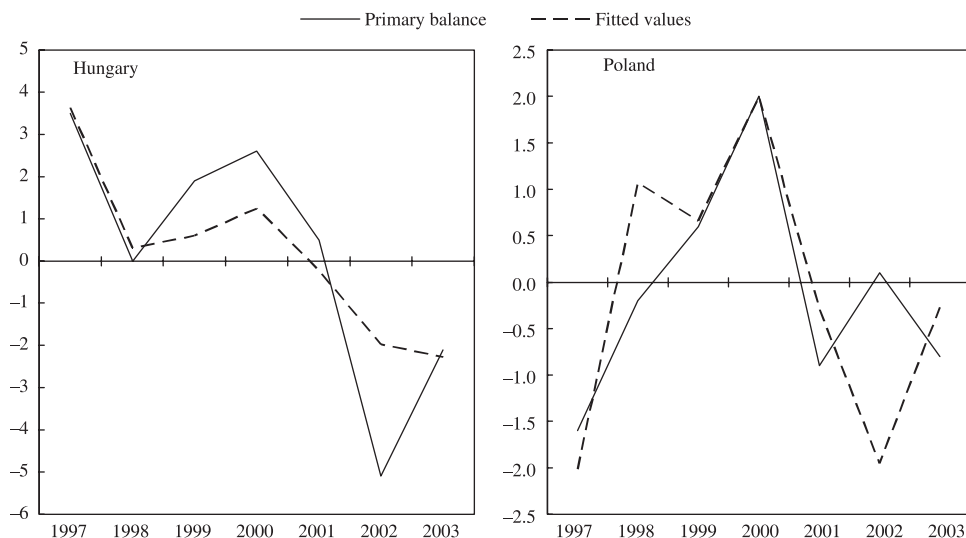
Figure 4. Primary balance and fitted values (non-linear least squares estimates, in percentage of GDP)

Source: Authors' estimates; and fiscal notifications to the European Commission.

In Hungary, the worsening prediction for the budget balance in the last two years of the sample period reflects the worsening institutions.

5.3. Components of the budget institutions index

Finally, we examine if the three components of the budget institutions index have a different impact on performance (Table 11). While each component appears to have a strong and independent force, the implementation stage appears to be the most relevant. The implication, therefore, is that, while the rules in the preparation phase and the bargaining that goes on during the authorization stage restrain fiscal irresponsibility, the greater danger arises from the budget implementation; this, in turn, implies that checks are needed to ensure that the efforts of the first two phases are not undone. The political fragmentation and ideological variables remain strong influences. While the three time-invariant variables are important, there is a difference across the stages of some interest. In the two earlier phases of preparation and legal authorization, voter participation has a strong influence; however, in the final implementation phase, when, presumably, the actions are less visible to voters, the degree of voter participation in the democratic process has a smaller influence.

Column (4) examines if the three different phases that we identify are substitutes for each other. In other words, if any one of the phases is weakly developed, is it possible to compensate another phase with stronger checks and balances? To examine this question, we created a new index that took the lowest of the three values from

Table 11. Budget process stages and the delegation/contract-based approaches: non-linear least squares regressions

	Primary balance-to-GDP ratio					
	Budget preparation phase	Budget authorization phase	Budget implementation phase	Lowest score	Delegation approach	Contract-based approach
Constant	2.96 (7.28)	0.29 (6.19)	19.63 (18.42)	1.12 (6.38)	14.99 (11.28)	6.02 (7.98)
Inflation	0.04 (0.05)	0.07 (0.05)	0.02 (0.03)	0.07 (0.05)	0.08 (0.05)	0.07 (0.05)
Unemployment rate	0.13 (0.14)	0.18 (0.14)	0.02 (0.12)	0.19 (0.14)	0.15 (0.13)	0.14 (0.13)
Fiscal institutions index	2.99 (1.41)**	1.33 (0.53)**	3.79 (1.36)***	1.92 (0.85)**	4.49 (1.47)***	2.95 (0.95)***
Government fragmentation	6.18 (2.80)**	6.31 (2.72)**	7.47 (2.60)***	6.30 (2.76)**	6.34 (2.58)**	6.26 (2.58)**
Government ideology:						
Left/right	0.47 (0.18)**	0.40 (0.18)**	0.49 (0.18)***	0.43 (0.18)**	0.41 (0.17)**	0.39 (0.17)**
Nationalism	−0.75 (0.21)***	−0.77 (0.21)***	−0.68 (0.20)***	−0.77 (0.21)***	−0.73 (0.20)***	−0.72 (0.20)***
Fiscal centralization	1.04 (0.32)***	1.04 (0.31)***	0.72 (0.29)**	1.06 (0.31)***	0.98 (0.30)***	0.97 (0.30)***
Time-invariant variables:						
District magnitude	−1.26 (0.79)	−0.92 (0.45)**	−1.80 (0.69)**	−1.00 (0.55)*	−1.17 (0.52)**	−1.13 (0.47)**
Voter turnout	−0.12 (0.05)**	−0.10 (0.04)**	−0.04 (0.06)	−0.11 (0.40)***	−0.11 (0.04)**	−0.09 (0.04)**
Time dummies	Y	Y	Y	Y	Y	Y
Country dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	63	63	63
Adjusted R-squared	0.61	0.62	0.64	0.61	0.65	0.65

Note: This table displays non-linear least squares estimates of the same fiscal outcome as in Table 10.

Time-invariant variables interact with time dummies and the idiosyncratic variables x_{it} unemployment rate, openness, and fiscal institutions index. The fiscal institutions index in the first column is the budget preparation index, in the second column the budget authorization index, and in the third column the budget implementation index. In the fourth column, the fiscal institutions index is built by taking the lowest score among the three indexes used in the first three columns for each year. In the fifth column, the fiscal institutions index is constructed by taking into account the features relevant for the delegation approach; in the last column the characteristics relevant in a contract-based setting are considered. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

the three phases for each country in each year. The goal was to assess if the weakest phase could undermine fiscal responsibility. The results suggest that the phases are not substitutes and that weak links in the budget preparation, authorization, and implementation phases can hurt fiscal discipline; therefore, policy attention to all phases is required.

Columns (5) and (6) test for the differences between the delegation and contract-based approaches. The indices for the delegation and contract-based approaches were obtained by summing up items of the fiscal institutions index that are relevant in those settings. The delegation-approach index was formed by items 2–7 and 9–12, while the contract-based index by items 1, 5–7, and 9–11 (Appendix A, Table A1). The results suggest that both are statistically important. This appears to go against the Hallerberg and von Hagen (1999) hypothesis, which states that the contract-based approach is most relevant for multiparty coalitions because the finance minister cannot be trusted fully by coalitional partners to act on their behalf and, hence, delegation may prove ineffective. However, these authors also find that when budgetary institutions are 'young', the delegation and contract-based indices are correlated and both aspects are salient. Their results for the EU-15 show that between 1981 and 1994 the delegation approach was statistically significant in countries where it was expected to work and in the 'contract-based' states where it was not. Only since 1998 has the divergence between the two approaches become evident, with the delegation approach significant only in the 'delegation' states; similarly, the contract-based approach is significant only in the 'contract' states (Hallerberg, Strauch, and von Hagen, 2004). It is possible, then, that such divergence will appear in central and eastern Europe. However, Poterba and von Hagen (1999, p. 4) offer the following caution: 'The empirical evidence suggesting that institutions matter is stronger than the evidence on the mechanisms by which these institutions matter.' Thus, moving from these results to specific policy advice will ultimately depend on a more careful consideration of individual country circumstances.

6. DIFFERENTIATING THE EFFECTS ON EXPENDITURES AND REVENUES

Finally, we examine if fiscal institutions operate through the expenditure or revenue side of the budget. We estimate expenditure and revenue equations, jointly using the seemingly unrelated regressions methodology to gain efficiency. These results should be interpreted with caution, because the data available for revenue and expenditure (from the World Economic Outlook database) are not always consistent with the primary balance data used in the previous analysis (European System of Accounts '95 data from the countries' fiscal notifications to the European Commission) and are affected by breaks in the series.

In Table 12, we report results obtained by jointly estimating the expenditure and revenue equations (see Box 3). Following Persson (2002), we use in this analysis a more direct measure of 'observable' shocks, as distinct from the time dummies used

Table 12. Expenditure and revenue developments

	EU15 growth shock		Oil price shock		France/Germany primary balance	
	Exp-to-GDP	Rev-to-GDP	Exp-to-GDP	Rev-to-GDP	Exp-to-GDP	Rev-to-GDP
Lagged expenditure	0.38 (0.08)***		0.38 (0.08)***		0.38 (0.08)***	
Lagged revenue		0.26 (0.08)***		0.26 (0.08)***		0.26 (0.08)***
Unemployment rate	0.41 (0.13)***	0.08 (0.08)	0.41 (0.13)***	0.08 (0.08)	0.41 (0.13)***	0.08 (0.08)
Inflation	−0.02 (0.06)	0.06 (0.04)	−0.02 (0.06)	0.06 (0.04)	−0.02 (0.06)	0.06 (0.04)
Openness index	−6.46 (3.33)*	0.77 (2.25)	−6.46 (3.33)*	0.77 (2.25)	−6.46 (3.33)	0.77 (2.25)
Government fragmentation	1.80 (2.08)	2.12 (1.42)	1.80 (2.08)	2.12 (1.42)	1.80 (2.08)	2.12 (1.42)
Government ideology:						
Left/right	−0.02 (0.13)	0.06 (0.09)	−0.02 (0.13)	0.06 (0.09)	−0.02 (0.13)	0.06 (0.09)
Nationalism	0.31 (0.14)**	0.02 (0.10)	0.31 (0.14)**	0.02 (0.10)	0.31 (0.14)**	0.02 (0.10)
Fiscal centralization	−0.11 (0.18)	0.10 (0.12)	−0.11 (0.18)	0.10 (0.12)	−0.11 (0.18)	0.10 (0.12)
Fiscal institutions index	−3.59 (1.64)**	−1.02 (1.11)	−3.59 (1.64)**	−1.02 (1.11)	−3.59 (1.64)**	−1.02 (1.11)
Shock	−0.56 (0.28)**	−0.27 (0.19)	0.96 (0.25)***	0.84 (0.18)***	−0.45 (0.20)**	−0.32 (0.14)**
Time dummies	Y	Y	Y	Y	Y	Y
Country dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	63	63	63

Note: This table displays seemingly unrelated estimates of the fiscal outcome:

$$y_{it} = \alpha + \beta u_t + \gamma s_{it} + \delta x_{it} + \phi w_{it} + v_i + \varepsilon_{it}$$

where y_{it} is the primary expenditure/revenue-to-GDP ratio in country i and year t; v_i is a country specific component; s_{it} is the fiscal institutions index; w_{it} are political control variables; and x_{it} are economic variables. u_t represents variables common to all countries (EU15 GDP growth, oil prices, German/France primary balance). Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

Box 3. Observable shocks, institutions, and the evolution of expenditures and revenues

The expenditure and revenue equations are estimated jointly through the seemingly unrelated regressions procedure (to allow for correlations in error terms of these equations), enhancing the efficiency of the estimates. For each equation, the following parametrization is used:

$$y_{it} = \alpha + (\beta + \phi z_i)u_t + \delta x_{it} + \phi w_{it} + \gamma s_{it} + (v_i + \eta z_i) + \varepsilon_{it}, \tag{3}$$

where y_{it} represents either expenditure or revenues at time t in country i. As above, country-fixed effects eliminate the unchanging country features, $(v_i + \eta z_i)$. The movement of observed variables proxies for common shocks, u_t. In addition to the oil prices used by Persson (2002), we also use growth in the EU-15 and the primary budget balance in France and Germany. The response to these shocks is shaped by the time-variant variables, z_i.

earlier to proxy 'unobservable' shocks. We use three alternative shocks: GDP growth in the EU-15, oil price movements, and the average of the lagged primary balances in Germany and France.

Three findings emerge from the expenditure equation.[9] First, stronger fiscal institutions are clearly associated with lower primary expenditures, validating the expectation that common-pool problems affect the expenditure side and, moreover, that checks and balances can contain the tendency to satisfy all interest groups. Second, although the political variables have the expected signs, only the nationalism variable is consistently significant. Third, the shocks matter. More rapid European growth is associated with a lower expenditure-to-GDP ratio, as if higher European growth stimulates higher growth in our sample of countries but expenditures do not rise commensurately. Higher oil prices are associated with higher expenditures, possibly reflecting subsidies and increased operational costs (though, as noted below, higher oil prices also bring in more revenues). More fiscal discipline in Germany and France apparently creates some pressure to be fiscally responsible.

Not surprisingly, it is not easy to explain movements in the tax-to-GDP ratio (Table 12).[10] Political economy models speak less to the determinants of taxation than they do to the common-pool problems relating to expenditures (see also Perotti and Kontopoulos,

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[9] The error terms in the two equations are highly correlated, with a correlation coefficient of just under 0.5.

[10] Here, as elsewhere, we explored if the 'output gap', the difference between actual and potential output, influenced the tax-to-GDP ratio. Given the difficulties in constructing such a measure from the short time series available for countries that have emerged from transition only in the mid-1990s, it is not surprising that the measured output gap was not associated with taxes, or with expenditures or budget deficits.

2002). Inertia in tax receipts, reflected in the significant coefficient on the lagged tax variable, explains part of the movement. Interestingly, external shocks play a more salient role in the evolution of tax receipts. Of these, a rise in oil prices is most consistently related to higher tax receipts, possibly due to import and excise duties. As with expenditures, revenues do not keep pace with externally induced growth. Also, a large surplus in Germany and France is associated with a lower tax-to-GDP ratio; hence, if a discipline effect exists, it is mainly through the expenditure side and the gains are partially relinquished on the tax receipts.

Finally, do the external shocks interact with the time-invariant variables, and, if they do, is the role of fiscal institutions altered? The answer to the latter question is no: the role of fiscal institutions remains strong and robust on the expenditure side (Table 13). With respect to the role of the interactions, the results are mixed and suggest that the different shocks work through different time-invariant variables. A larger district magnitude is associated (weakly) with higher expenditures when EU growth increases, that is, countries with larger district magnitudes tend to raise their expenditures to a greater extent than those with smaller district magnitudes. Larger district magnitudes also are associated with lower tax receipts when oil prices rise. In contrast, a larger voter turnout appears to operate through higher expenditures when there is an oil price shock.

7. CONCLUSIONS

Politics has a crucial influence on budget outcomes – a widely accepted conclusion, which we confirm for a group of new and potential members of the European Union over the period 1997–2003. We find, moreover, that politics works not only through long-term determinants but more evidently through the operation of contemporary democratic practice. In other words, contemporary politics is not predetermined by the structural and historical features of an economy and, hence, exercises an independent influence on budgets. Also, contemporary politics itself is best represented by a vector of attributes. In the context of this paper, the combination of government fragmentation in the ruling coalition, the ideological predispositions along different dimensions (the traditional left-right divide, nationalism, and the emphasis on decentralization of government), and the degree of voter participation contribute to budgetary outcomes. We note, in particular, that government fragmentation will often not reveal itself to be important unless juxtaposed with ideological orientation. The results on voter participation, supporting earlier findings of Mueller and Stratmann (2003), are troubling and suggest that greater democratic participation is accommodated by increased budgetary indiscipline.

If politics is so influential – and, particularly if politics is set on an unrelenting long-term historical course – then is budget discipline a hopeless cause? The answer, apparently, is no – hope is not lost. Stronger checks and balances in the budgetary process, through hierarchical rules and collegiality, materially improve budgetary

Table 13. Expenditure and revenue developments: the role of time-invariant factors

	EU15 growth shock		Oil price shock		France/Germany primary balance	
	Exp-to-GDP	Rev-to-GDP	Exp-to-GDP	Rev-to-GDP	Exp-to-GDP	Rev-to-GDP
Lagged expenditure	0.33 (0.08)***		0.34 (0.08)***		0.38 (0.08)***	
Lagged revenue		0.26 (0.08)***		0.23 (0.08)***		0.26 (0.08)***
Unemployment rate	0.39 (0.15)***	0.02 (0.10)	0.60 (0.15)***	0.05 (0.10)	0.41 (0.13)***	0.08 (−0.08)
Inflation	−0.04 (0.06)	0.05 (0.04)	0.00 (0.06)	0.07 (0.04)*	−0.02 (0.06)	0.05 (0.04)
Openness index	−3.57 (3.67)	1.43 (2.56)	−7.40 (3.27)**	1.79 (2.20)	−6.46 (3.42)*	0.61 (2.30)
Government fragmentation	1.27 (2.08)	1.80 (1.45)	2.33 (1.99)	2.02 (1.36)	1.91 (2.20)	1.99 (1.51)
Government ideology:						
Left/right	0.00 (0.13)	0.06 (0.09)	−0.02 (0.12)	0.05 (0.09)	−0.02 (0.13)	0.06 (0.09)
Nationalism	0.32 (0.14)**	0.04 (0.10)	0.25 (0.14)*	0.04 (0.10)	0.31 (0.14)**	0.02 (0.10)
Fiscal centralization	−0.29 (0.21)	0.03 (0.15)	−0.02 (0.20)	−0.01 (0.13)	−0.10 (0.19)	0.09 (0.13)
Fiscal institutions index	−3.83 (1.62)**	−0.92 (1.11)	−3.42 (1.55)**	−0.84 (1.05)	−3.60 (1.69)**	−0.91 (1.14)
Shock	−2.06 (1.71)	−1.54 (1.19)	0.46 (0.53)	1.30 (0.36)***	−0.28 (1.43)	−0.64 (0.96)
Interacted with:						
District magnitude	0.47 (0.26)*	0.02 (0.18)	−0.07 (0.05)	−0.10 (0.03)***	−0.02 (0.20)	−0.02 (0.14)
Voter turnout	0.00 (0.02)	0.02 (0.02)	0.01 (0.00)**	0.00 (0.00)	0.00 (0.02)	0.01 (0.01)
Time dummies	Y	Y	Y	Y	Y	Y
Country dummies	Y	Y	Y	Y	Y	Y
Observations	63	63	63	63	63	63

Note: This table displays seemingly unrelated estimates of the fiscal outcome:

$$y_{it} = \alpha + (\beta + \phi z_i)u_t + \gamma s_{it} + \delta x_{it} + \phi w_{it} + (v_i + \eta z_i) + \varepsilon_{it}$$

where y_{it} is the primary expenditure/revenue-to-GDP ratio in country i and year t; v_i is a country specific component; s_{it} is the fiscal institutions index; w_{it} are political control variables; x_{it} are economic variables; and z_i are time-invariant institutional variables. u_t represents variables common to all countries (EU15 GDP growth, oil prices, German/France primary balance). Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

discipline. This discipline, apparently, acts through constraints on expenditures, which is where the scope for indiscipline is greatest, because politicians, while benefiting themselves and their constituents from additional expenditures, do not fully bear the costs of those additional expenditures.

The question of policy interest then is: What are the determinants of good fiscal institutions? This is not a question that we tackle. Clearly, in the context of the countries we examine, there was a window of opportunity during the transition from centrally planned to market economies, when the old political constraints were (partially) broken down, that created the possibility of a wide-ranging set of reforms. Enhancing the quality of fiscal institutions was apparently part of the agenda of reformers during this period. However, as we document, progress was not uniform, and there were slippages.

This leads to the further question: Is the necessary institutional engineering feasible elsewhere or, indeed, even in these same countries as a new politics takes over? The answer, to the extent our paper hints at one, is yes, if the politics behaves. Fiscal institutions are somewhat correlated with both the practice of contemporary politics and long-term structural features. This is seen in our finding that the coefficient on budget institutions' quality, though remaining highly significant, is whittled down as we introduce these political determinants of budgetary outcomes. In part, then, the quality of budgetary institutions is a reflection of a fiscally conservative political system. To the extent that political forces turn away from fiscal conservatism, the likelihood of fiscal institutions reforms will decline. Thus, although our principal message is that of hope – because, empirically, long-term determinants do not exercise the tyranny that is sometimes feared – the tussle between the forces supporting sound institutions and the politics of claims on budgetary resources will continue.

Discussion

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Recent literature has shown many ways in which the fiscal performance of a country depends on constitutional provisions/electoral rules; but these in turn are likely to be a function of deep structures of a society (division along ethnic or religious lines etc.). The paper by Fabrizio and Mody takes up the challenge to address an important question for policy design. Can budget institutions still make a difference for fiscal outcomes?

The authors address this question empirically. The analysis aims at disentangling the role of budget institutions from structural and political factors. For reason that will be discussed later, the sample includes new and potential EU members, observed over a limited time period (between 1997 and 2003). However, it will be misleading

to think of the new EU members as the subject of the analysis. On the contrary, the ambition of the paper is to reach very general conclusions about policy design, and provide an empirical contribution to both the theoretical and policy debate. The extent to which they succeed is of course an open issue.

To pursue their goal the authors set up regression models where, after controlling for a number of economic variables, there is a horse race between three different sets of determinants of fiscal outcome: (a) structural determinants (such as diversity of population and electoral systems); (b) contemporary politics (political fragmentation, ideology, voter participation – which can be interpreted as an index of demand on government, but also as an index of quality of vote); (c) the quality of budget institutions (proxied by a synthetic multidimensional index).

Somewhat surprisingly, the results show that, when it comes to explain fiscal performance, budget institutions are significant, and robustly so. In addition, contemporary politics appears to trump economic conditioning variables, while inclusiveness (meaning representation of different interests in the budget process) seems to hurt budgetary outcomes.

The quality of budget institutions is proxied by an index aggregating different stages of the budget process: preparation, authorization and implementation. One section of the paper presents useful examples and institutional detail to illustrate the logic underlying the index.

Now, what matters for fiscal discipline is not only the overall average index score, but also the value of each one of its components. Clearly, there is no substitutability in the quality of institutions at different stages of the budget process – being loose in the preparation cannot be compensated by being rigorous in the implementation! Conversely, a low value of the index at any stage indicates that there are opportunities to breach the rules and loopholes that can easily undermine overall fiscal discipline.

In my comments, I will focus on three dimensions of the paper, theory, sample choice, welfare.

Theory

The theoretical underpinning of the exercise is the 'common pool problem'. Fragmentation of interests in the budget process compromise discipline because each group of actors fails to internalize the costs of public goods and/or redistribution going mainly to their benefits.

It is important to stress that these costs can be shifted not only onto other active tax-payers, but also intertemporally, to future generations. Hence, the lack of fiscal discipline can be mirrored by either a sub-optimally large government; or a large deficit.

Most of the paper focuses on the latter. However, the authors also add a section where the dependent variable in the regression model is government spending. The model proposed by the authors appears to work comparatively well in either case.

Yet, there is a tension between different implications of the common pool problem. For instance, consider the two approaches to the common pool problem in budgetary matters discussed in the text. One is centralization of budget decision (so as to internalize the costs and benefits of public activities); the other one is negotiation of multi-annual fiscal targets, making sure that there is full commitment to them. It is reasonable to expect these two approaches to have different merits/problems in addressing the intertemporal or redistributive implications of budget decisions.

Sample

Why only ten countries, observed for less than ten years? The authors motivate their choice by pointing to the fact that during the sample period their countries display time-series variation in the quality of their fiscal institutions.

This is an advantage in the following sense: to the extent that country dummies capture many time-invariant features, using fixed effects may alleviate the problem of omitted variable. This option is not available when focusing on countries with no within-sample variability in budget institutions.

Nonetheless, the small size of the sample raises two issues. First, is there enough time for a new budget institution to become effective/biting? New institutions may take some time before being fine-tuned. On defence of the author, it may well be possible that some of the teething problems of new institutions be captured by the quality index (which in principle could record improvements at each stage of the budget process).

Second, there is a danger for spurious correlation. The sample consists of potential members of the EU. It is plausible that the goal of participating in the EU is what ultimately motivates reforms and fiscal discipline. It may be possible that the political drive towards the EU simultaneously explains the adoption of strict budget institutions and fiscal retrenchment. How can one disentangle the role of institutions from the role of an 'external constraint'?

The experience of the euro area is relevant in this respect. As is well known, the deficit criterion has been binding before the creation of the euro, less so afterwards.

Welfare

In the paper and the theoretical literature in the background, a large primary deficit is positively correlated with a severe common pool problem. But the countries in the sample are emerging markets/transition countries. How can one draw a clear line between excessive deficits, and optimal deficits vis-à-vis the need for infrastructure and, say, pension reforms. Paradoxically, a government with more credibility in fiscal matters should be able to run larger deficits!

Note that this observation just mirrors the ongoing debate on the Stability and Growth Pact in Europe.

Concluding comments

Provided that one likes the methodology (being fully aware of problems of endogeneity, omitted variables, non-linearity, threshold effects and so on), there are a few things to learn from the authors' *tour de force* through the data. Examples are the results regarding the contribution of inflation to public finance, pointing to the revenue loss from convergence policies, but especially the treatment of political variables.

Multi-dimensionality is the point stressed by the authors. Looking at historical and political determinants of budget, regression results clearly improve when variables are grouped in indexes. Aggregation criteria are, however, ad hoc and arbitrary. In this respect, one should note that the main constraint to the analysis of multi-dimensionality is theoretical rather than empirical.

Overall, I find the paper informative. It provides empirical evidence corroborating the idea that good institutions make a difference – a welcome input to the current debate on budget policy in Europe and elsewhere. More in general, it is a contribution to the core debate about European political and institutional process, and, using a popular term, European governance. Is there a role for European institution and politics to foster institutional development among its members? The empirical results in this paper suggest that 'all hope is not lost'.

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Using a small panel of countries, this paper asks whether changes in fiscal institutions over time are associated with changes in a government's primary surplus. There are ten countries, all in transition from central planning, and the data set runs from 1997 to 2003. One feature of the transition economies is that, given their recent history, they have been especially likely to see significant changes in their institutions. As a result, the authors not only ask an interesting question, but also have a data set that may be unusually informative.

A particular strength of the paper is that it is careful in defining and examining a specific set of institutions. Interpreting the concept of 'institutions' broadly has been a successful strategy in recent empirical work, but it is clear that the task of designing and building better institutions will soon require sharper definitions. The paper goes a long way in this direction, in relation to the budget-setting role of government. The authors identify a set of dimensions to the budget-setting process, and assess the ten countries in terms of these various dimensions. One consequence is that the paper embeds a clear view of the changes that might constitute a feasible and successful institutional reform. This attention to the 'detail' or 'fine structure' of institutions is all too rare in economics, where a liking for abstract reasoning sometimes leads to impatience with issues that may be critical in practice.

Moreover, the empirical results suggest that changes to budget-setting institutions can have significant effects on fiscal outcomes, notably the primary surplus. The

paper finds that moving from the 25th percentile of institutional quality to the 50th percentile raises the primary surplus by at least 1.5 percentage points of GDP. Given the likely range of variation of the primary surplus, this is a powerful effect, and one that is worth investigating in more detail.

I have three main criticisms. First, the empirical analysis looks at year-to-year movements in fiscal outcomes over 1997–2003. But typically, one might think of the primary surplus as a realization. In other words, it is a stochastic outcome, rather than wholly under government control from one year to the next. After all, predicting tax revenues is not an exact science. With this in mind, I think the specifications in the paper would be more persuasive if they allowed for lags in the responses of the primary surplus to changes in budget-setting institutions. But in fairness to the authors, the short time dimension of the panel means that there is only limited scope for experiments along these lines.

My second criticism concerns the origin of the policy changes. The empirical results are mainly based on fixed effects estimators, using several different methods. The logic of the fixed-effects approach is similar to the difference-in-differences estimator used in the programme evaluation and 'treatment effect' literature. Here, the treatment corresponds to changes in budget-setting institutions. A central question is then, what determines the assignment of the treatment? The empirical methods and discussion in the paper generally treat the institutional reforms as randomly assigned, which may be a mistake. After all, these reforms are choices, rather than exogenously imposed by an outside party.

Why does this matter for the empirical work? One reason to be cautious is that, in practice, countries that choose to undertake reforms may differ in a number of ways from the implicit control group (non-reformers). As a result, the estimates are less likely to be recovering a causal effect. For example, reforms may be especially likely after the fiscal position has worsened significantly, and it may be the latter driving a fiscal 'rebound' rather than the reform itself. This could be seen as similar to the phenomenon of Ashenfelter's Dip in the evaluation of labour market programmes. If the likelihood of reforms depends on time-varying, country-specific factors, there will be systematic differences between the treatment and control groups at the time of the treatment, and this will tend to undermine the identification of a causal effect. The final version of the paper briefly addresses this possibility, but I would have liked to see it pursued in more detail.

A related and final criticism is a technical one, concerning the size of the sample. There are two countries in which the extent of reform is much greater than the others. The remaining countries could be seen as a control group, but it is clear that the estimates have to rely on contrasts between a small number of cases. It could even be argued that, given the small size of the panel, the standard errors attached to the key parameters are surprisingly low. One possibility is that the standard errors are exaggerating the amount of information in the sample, something that could occur if the errors are dependent over time. Tests and parametric corrections of the kind

used in the paper cannot rule this out completely, but the small cross-section dimension of the panel largely precludes other solutions, such as clustering or bootstrapping.

In summary, I found this to be an unusually interesting paper. Above all, it gets to grips with a specific and well-defined set of institutions, and examines a set of countries where the experience of institutional reform may be especially illuminating. The paper presents some empirical results that are new and valuable although, as ever with observational data, some significant uncertainties and qualifications remain.

Panel discussion

Gilles Duranton stressed it was important to disentangle history from current events and therefore suggested a two-step approach to first look at the fixed effects and then analyse them, looking at long-term determinants. He also suggested that policy was not driven by long-run considerations and thought IMF interventions, potentially driven by bad institutions rather than history, could be an important factor. The authors replied that a dummy for IMF programmes was included, but it did not have an effect.

Allan Drazen pointed out that fiscal institutions are hard to measure, particularly on a yearly basis and was also concerned about the subjectivity of the measures. In the presence of a larger deficit, it is more likely that institutions get bad scores. The authors answered that data collection as described in Appendix A was not survey based.

Drazen also noted that, electoral variables contrarily to voter turnout, are not significant. Drazen suggested that deficits do matter for *new* democracies in very robust ways. In his own work, he found that new democracies are fragile and thus a deficit is used to convince voters of the benefits of democracy itself (and increase voter turnout) rather than to win particular votes. This mechanism would be consistent with voter turnout mattering in this paper. Drazen concluded that it was important to beware of extrapolating results from countries, formerly communist regimes that are very recent democracies.

Wendy Carlin felt that the most interesting information may come from reform *reversals* and whether budget institutions can explain them. Carlin suggested that as soon as the country is part of the EU, the pressures of populist institutions may return, defeating any incentive to reform. The authors replied that external influence was surely an issue, but noted that the accession negotiations do not involve budget process rules.

APPENDIX A: CONSTRUCTION OF THE BUDGET INSTITUTIONS INDEX

The index is a quantitative measure of budget institutions – the rules and mechanisms that govern the budget process (Table A1). The goal is to consolidate the objective

Table A1. Constructions of the index: fiscal institutions and their index parameters

	Weighting factors			Numerical coding
	Index	Sub-index	Item	
A. Preparation	0.33			
1. Existence of statutorily mandated fiscal rules		0.25		
a. Balanced budget rule.				4.00
b. Limits on public borrowing.				2.00
c. No legal limits on borrowing.				0.00
2. Sequence of budgetary decision making		0.25		
a. MF sets forth aggregate and specific budget targets in initial budget circular.				4.00
b. MF proposes, cabinet decides on targets for budget aggregates and spending limits are assigned to each ministry before spending ministries develop budget requests.				3.00
c. MF proposes, cabinet decides on targets for budget aggregates before spending ministries develop budget requests.				2.00
d. Budgetary targets are set on the basis of preliminary budget requests.				1.00
e. No budget targets are determined.				0.00
3. Compilation of the draft budget		0.25		
a. Finance ministry holds bilateral negotiations with each spending ministry.				4.00
b. Finance ministry holds bilateral negotiations, other parties included.				2.00
c. Finance ministry only collects budget requests and compiles summary for cabinet session.				0.00
4. Members of executive responsible for reconciling conflicts over budget bids		0.25		
a. MF or PM can veto or overrule cabinet decision.				4.00
b. Senior cabinet committee, then whole council of ministers or cabinet.				2.00
c. Executive collectively (e.g., council of ministers or cabinet).				0.00
B. Legislation				
5. Constraints on the legislature to amend the government's draft budget		0.25		
a. Deficit provided in the draft budget cannot be exceeded, or individual amendments have to indicate offsetting changes.				4.00
b. No restrictions.				0.00
6. Sequence of votes		0.25		
a. Initial vote on total budget revenues, expenditures, and the deficit.				4.00
b. Final vote on budget aggregates.				0.00
7. Relative power of the executive vis-à-vis the parliament		0.25		
a. Cabinet can combine a vote of confidence with a vote on the budget.			0.33	4.00
b. Draft budget is executed if parliament fails to adopt the budget before the start of the fiscal year.			0.33	4.00

	Weighting factors			Numerical coding
	Index	Sub-index	Item	
c. Parliament can be dissolved if it fails to adopt the budget in due time.			0.33	4.00
8. Authority of the national president in the budget procedure		0.25		
a. No special authority.				4.00
b. President has veto right (president elected by parliament).				2.67
c. President has veto right (president directly elected by citizens).				1.33
d. President has veto right (qualified majority required to override veto).				0.00
C. Implementation	0.33			
9. Flexibility to change budget aggregates during execution		0.25		
a. Any increase in total revenues, expenditures and the deficit needs to be approved by parliament in a supplementary budget.				4.00
b. Revenue windfalls can be used to increase expenditure without the approval of parliament as long as the deficit is not increased.				2.67
c. Simultaneous changes in revenue and expenditures allowed without approval of parliament if budget balance is not changed.				1.33
d. At total or large discretion of the government.				0.00
10. Transfers of expenditures between chapters (i.e. ministries' budgets)		0.25		
a. Require approval of parliament.				4.00
b. FM or cabinet can authorize transfers between chapters.				2.67
c. Limited.				1.33
d. Unrestricted.				
11. Carryover of unused funds to next fiscal year		0.25		
a. Not permitted.				4.00
b. Only if provided for in initial budget or with finance ministry approval.				2.67
c. Limited.				1.33
d. Unlimited.				0.00
12. Procedure to react to a deterioration of the budget deficit (due to unforeseen revenue shortfalls or expenditure increase)		0.25		
a. MF can block expenditures.				4.00
b. The cabinet can block expenditures.				2.67
c. Approval of the parliament necessary to block expenditures.				1.33
d. No action is taken.				0.00

Source: IMF staff; Gleich (2003).

features of the budget process such that a larger value implies greater checks and balances. Following Gleich (2003), values (ranging from 0 to 4) were assigned to the three phases of the budget process: preparation, authorization and implementation. Sources of information on these features include the countries' annual fiscal budget laws, Reports on the Observance of Standards and Codes (ROSC) Fiscal Transparency Module, produced by the International Monetary Fund, and direct contact with the countries' authorities. We also made use of the information on budget institutions collected by Gleich (2003) and Yläoutinen (2004).

Budget preparation stage

The institutional features considered are (1) fiscal rules that limit *a priori* the fiscal deficit; (2) the establishment of quantitative budget targets based on a macroeconomic framework; and (3) the relative power of the finance/prime minister in the budget negotiations. The following variables, shown in Table A1, are taken into consideration during this stage:

- Variable 1 refers to the strictness of permanent constraints on budgetary parameters, such as legal limits on the size of budget deficits or government borrowing.
- Variable 2 assesses control by the finance minister in setting fiscal targets and ceilings to guide the budget preparation.
- Variable 3 captures the power of the finance minister in compiling and negotiating the draft budget.
- Variable 4 reflects how remaining disputes from the bilateral negotiations are reconciled in the executive branch. Procedures in which the whole cabinet is involved are classified as more decentralized than procedures in which senior cabinet committees discussing the matter before it is presented to the whole cabinet.

Budget authorization stage

Given the common-pool dilemma, spending and deficit pressures can emerge if legislators are left unconstrained to amend the draft budget proposal. Therefore, institutional regulations that limit the scope of amendments to the budget proposal enhance discipline. The institutional characteristics considered are (1) explicit limits on the scope of amendments; (2) the sequence of decision making in the authorization process; (3) the relative power of the executive branch and the parliament; and the role of the president in this process. The four variables considered during the authorization stage follow (Table A1):

- Variable 5 regards formal constraints on the scope for the legislature to amend the government budget, and classifies processes as stricter if the amendments allowed are limited.

- Variable 6 refers to the sequence of decision making during the budget delibera-
  tion, and focuses on whether a decision is made on the size of major budget
  aggregates before details are worked out.
- Variable 7 summarizes three institutional devices that reflect the strength of the
  executive branch (the government) vis-à-vis the parliament during the budget
  deliberation.
- Variable 8 captures the power of the president in the budget process; the less the
  power, the stronger implicitly the ability of the government in achieving its
  budget priorities.

Budget implementation stage

The first focus at this stage is on how binding the approved budget is. If the govern-
ment can easily modify budget parameters, the agreements made in the preparation
and implementation stages could be undermined and the authorization function of
parliament weakened. Also, a degree of flexibility to react to unforeseen revenue
shortfalls or spending overruns is necessary at the implementation phase. The varia-
bles considered during this stage are the following:

- Variable 9 gets a high score if parliament needs to approve a supplementary
  budget to institute changes. Similarly, Variable 10 gets a high score if transfers of
  allocations between ministries require parliamentary approval. Finally, in Vari-
  able 11, the inability to carry over of unused funds to the next year is regarded
  as conducive to discipline.
- With respect to the flexibility to react to unforeseen shocks, in Variable 12 the
  finance minister's ability to block expenditures is seen as the best option, with
  progressive weakening if expenditure blocking requires cabinet approval,
  parliamentary approval, or no approval at all.

On this basis, four indices were constructed for each country. Three refer to the
quality of budget institutions in the three different stages of the budget process –
preparation, authorization and implementation – and the fourth that represents the
overall index. Table A1 reports the weights used in the aggregation to create the three
component indices and the overall index. The variables are constructed as follows:

$$\text{Budget preparation index} = 1/4 \sum_{i=1}^{4} x_i$$

$$\text{Budget authorization index} = 1/4 \sum_{i=5}^{8} x_i$$

$$\text{Budget implementation index} = 1/4 \sum_{i=10}^{13} x_i$$

Table A2. Construction of the index: scores

	A. Preparation stage						B. Authorization stage						C. Implementation stage						Overall index	
	Variable				1997	2003	Variable				1997	2003	Variable				1997	2003	1997	2003
	1	2	3	4	Score	Score	5	6	7	8	Score	Score	9	10	11	12	Score	Score	Score	Score
Bulgaria	0	0 3[a]	4	0	1.00	1.75	0	0	1.33	1.33	0.67	0.67	1.33	2.67	4	4	3.00	3.00	1.54	1.79
Czech Republic	0	0 3[a]	4	0	1.00	1.75	0	4	4 2.67[b]	2.67	2.67	2.34	1.33 4[c]	2.67	4 1.33[b]	2.67	2.67	2.67	2.09	2.23
Estonia	2	3	4	0	2.25	2.25	4	0	1.33 2.67[d]	2.67	2.00	2.34	4	4	2.67	4	3.67	3.67	2.61	2.72
Hungary	0	2	4	0	1.50	1.50	0	0	1.33	4	1.33	1.33	2.67 0[e]	1.33	1.33	2.67	2.00	1.33	1.59	1.37
Latvia	2	2	2	4	2.50	2.50	0	0	0	2.67	0.67	0.67	4	4	2.67	4	3.67	3.67	2.26	2.26
Lithuania	0	0 1[f]	4	0 2[f]	1.00	1.75	4	0	1.33	1.33	1.67	1.67	4	2.67	4 1.33[b]	4	3.67	3.00	2.09	2.12
Poland	0 2[a]	0 1[f]	4	2	1.50	2.25	0 4[a]	0	4	0 4[a]	1.00	3.00	4	2.67	2.67	2.67	3.00	3.00	1.82	2.72
Romania	0	1 2[d]	4	0	1.25	1.50	0 4[d]	0	0	1.33	0.33	1.33	4	2.67	4	2.67	3.34	3.34	1.62	2.04
Slovak Republic	0	1	2	0	0.75	0.75	0	0	2.67	2.67	1.34	1.34	2.67	2.67	1.33	2.67	2.34	2.34	1.46	1.46
Slovenia	0	3	4	4	2.75	2.75	4	0	1.33	4	2.33	2.33	2.67	2.67	2.67	2.67	2.67	2.67	2.56	2.56

[a] Changed in 1998.

[b] Changed in 2001.

[c] Changed in 2000.

[d] Changed in 2003.

[e] Changed in 2002.

[f] Changed in 1999.

Source: Authors' calculations.

The overall index is calculated as the simple average of the three indices above. Table A2 shows the underlying measures on each of the sub-measures, indicating also the year in which a change occurred.

Delegation and contract-based indices

The indices for the delegation and contract-based approaches were obtained by summing up items of Table A1 that are relevant in those settings. The delegation-approach index was formed by items 2–7 and 9–12, which emphasize the role of a centralized fiscal authority. The contract-based index was constructed using items 1, 5–7, and 9–11, which highlight the presence of well-informed and transparent rules (the role of the minister of finance remains in this approach but mainly to monitor and enforce pre-existing contracts rather taking a proactive role in the formation of the budget).

Lowest-score index

In order to analyse whether the lowest index is the crucial one (or in other words, if a high value on a particular component can substitute for a low value on another component), we have constructed an index using the lowest score of the three components for each year and country.

APPENDIX B: VARIABLES AND DATA SOURCES

Dependent variables

For the fiscal outcome, the general government primary balance is considered. Data from the fiscal notifications to the European Commission are used. Total revenue and grants and total expenditure and net lending minus interest payments are also considered in the analysis. Since these data are not available for all countries in the sample from the fiscal notifications, data from the IMF *World Economic Outlook* (WEO) database are used.

Time-varying economic conditioning variables

- Public debt as percentage of GDP (lagged); unemployment rate; openness index (imports plus exports normalized by GDP); output gap, applying the Hodrick-Prescott filter to GDP data. These are based on data from the IMF WEO.
- Dummy for an IMF programme, taking value 1 if the country had a programme with the Fund during that year, 0 otherwise.
- Dummy for the preparation to EU accession, taking a value of 1 from the year the country was invited to start the negotiations on *aquis communitaire* chapters.

- France/Germany primary balance is the average of the lagged primary balances in France and Germany. Data are from the EUROSTAT database.

Time-varying political variables

- *Government fragmentation.* This variable is constructed as the Herfindhal index. It is the sum of squares of the shares of each party in the government coalition. The index ranges in value from 0 (in the case of very fragmented coalitions to 1 (if one party forms the government). *Data sources: Database on Political Institutions, 2000* (updated in 2004); http://www.worldbank.org/research/bios/pkeefer.htm; *Parties and Elections in Europe*, www.parties-and-elections.de; and Economist Intelligence Unit reports.
- *Ideological orientation of governing coalitions.* Three dimensions are used to characterize the ideological orientation of the government coalition. These relate to: (a) left/right orientation, with a larger value indicating a greater leaning to the right; (b) nationalism (promotes a national rather than cosmopolitan consciousness, history, and culture); and (c) centralization (opposes any decentralization of administration and decision-making). For each dimension, the government coalition's ideological position is estimated as the sum of each party's position, weighted by the party's seats in parliament. *Data source: Database on Party Policy in Modern Democracies* by Benoit and Laver (2005) http://www.politics.tcd.ie/ppmd/, which quantifies the position with respect to these and other dimensions for all parties in 47 countries.

  Dummy assuming a value of 1 for the year of parliamentary elections, 0 otherwise.

Fiscal institutions indices

These variables are described in Appendix A.

Ethnic fractionalization

The variable is constructed as one minus the sum of squares of the shares of identified ethnic groups. If the country has only one ethnic group, the value of the index is zero; as the number of ethnic groups increases, the index of fractionalization increases to 1. *Source*: Alesina, Devleeshauwer, Easterly, Kurlat, and Wacziarg (2003) http://www.stanford.edu/~wacziarg/papersum.html

District magnitude

The number of representatives elected by a single district. *Data source: Database on Political Institutions, 2000* (updated in 2004) http://www.worldbank.org/research/bios/pkeefer.htm;

Voter turnout

Voter turnout as percent of voting age population (see Mueller and Stratmann, 2002). *Data source: Institute for Democracy and Electoral Assistance* http://www.idea.int/vt/index.cfm

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